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THE AUTOMOBILE MAGAZINE

AUGUST, 1901

"Speeding Up"

95 LIBERTY ST., NEW YORK, U.S.A.

VOLUME III NUMBER 8

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THE AUTOMOBILE MAGAZINE

VOL. III AUGUST, 1901 No. 8

Automobiles in the Glasgow International Exhibition

By A. F. SINCLAIR

SO far as automobiles are concerned the exhibition is what is sometimes described as a "frost," in polite language a decided failure. Several causes appear to have operated to bring about this result, but the most important has been undoubtedly indifference, on the part of the exhibition executive on the one hand, and by the industry on the other. Two years ago when space was being alloted for the various exhibits, the condition of the automobile industry in this country did not justify makers in anticipating to any extent, and they held off to see how things would turn out, intending to secure space later on should the improvement in trade warrant such a course. Very considerable progress has been made during the intervening period, and towards the end of last year a number of applications were made for space, among the applicants being the Motor Manufacturing Company, of Coventry, perhaps the largest makers in Britain. Had this firm secured accommodation, other business people would have felt themselves compelled to obtain space at any cost, and a combination to erect a special annex would probably have been the result. The applicants were, however, informed that all available space had been allotted, and the trade finding itself all in the same box, with sufficient orders for all the machines they could build, did nothing. Nor did the exhibition executive consider it incumbent on them to make any special effort in favor of an automobile display, and the result is a show of three machines, and of these only one is shown as an automobile *per se*. It makes one quite melancholy to have to put

the fact on record, and no wonder. For months past we Scots had been protesting in the most emphatic manner against any desire to emulate the Paris Exposition either in grandeur or in extent. But low down in the bottom of our minds there was quite a distinct hope, amounting almost to a belief, that so far as a variety of machinery was concerned Glasgow would not be found much inferior.

Well, so far as automobiles come into consideration, it has been estimated that in the Paris Exposition there were over a thousand exhibits in connection with the industry, many of the exhibitors showing several machines. That seems to leave a good deal of a balance in favor of Paris.

Of the three machines shown two were constructed in Glasgow and the other in London. The last appears on the stand of the Electric Power Storage Company, of London, and seems to be placed there to advertise their storage batteries, of which an extensive collection is on view. The vehicle is a victoria in build, seated for two passengers and the driver. It is propelled by an electric motor of 2½ horse-power. This is a single, series wound, bi-polar motor, giving the 2½ horse-power under a pressure of 80 volts at 1,800 revolutions per minute. The accumulators are of the Company's Faure King type of 40 cells and can be fitted for long or short distances, long up to 35 miles and short up to 22 miles on a single charge. Alterations of speed are effected by means of change in the grouping of the cells. Speed and direction are controlled by a single steering handle. A victoria is not unlike the Parisian fiacre in appearance, and this vehicle suggests shopping, making calls and other urban requirements as its occupation, rather than a thirty-mile run in the country.

The second machine is shown on the stand of a local carriage building firm, and whether it is intended to advertise their business, or that of the Albion Motor Car Company in whose name it is exhibited, or both, there is no evidence to show, as the coroner's jury would put it.

The last of the three automobiles constituting this international exhibit is the only one accessible to the man of an engineering turn of mind, as it has an attendant able and affably willing to explain, while there are no glaring "Please do not touch" cards visible. It is an "Argyll" voiturette, built by the Hozier Engineering Company, of Glasgow, and is a neat and well finished specimen of the firm's work. The motive power is a 5 horse-power single-cylinder, water-jacketed De Dion motor suspended over the front axle, to which the crank

shaft is at right angles, and is fitted with a gearing to produce three speeds forward and one backward. The gearing is about the only part of the mechanism in which the builder can make for originality, now that he is dependent for his motor on a few patent-holding firms, and in the "Argyll" it is the distinguishing feature of the machine. A model to illustrate its use and explain its mechanical construction is shown on the stand. On the front of the car a radiator is fitted and immediately behind it is the petrol tank. The vehicle is seated for four persons and runs on driving and steering wheels of 30 inches and 26 inches diameter respectively. They are strong cycle-built wheels, fitted with pneumatic tires of American manufacture. The ignition is electric, produced by a primary battery. On the evening of June 5 one of these machines raced in a match against a Darracq touring car on the cycle track of the exhibition sports ground, and although it entirely failed to hold the other machine it ran very smoothly and with very little noise.

Although the exhibition is disappointing in some respects it is on the whole extremely interesting. It is especially so in the machinery hall, where limited space and consequent compression have resulted in only the best of each exhibitor's machines being shown. The art galleries, a permanent building of considerable extent, is a source of never failing interest. Here are shown in addition to the ordinary art exhibits, relics and remains of early mechanical industry and science. On the ground floor, the motor of what was probably the first automobile in Scotland is on view, and attracts much notice. It is a steam engine designed and constructed by John Scott Russell, the inventor of the "wave-sytem" of shipbuilding, who died so recently as 1882. This engine provided the motive power of a road carriage which ran between Glasgow and Paisley in 1834. It did good business for a time, but in those days a knowledge of the tensility of metals had not reached the position of an exact science, and the designer who allowed a good margin of strength in making the cranks abnormally thick at the bends, put a 40-pound pressure safety valve on a 30-pound pressure boiler or something of that sort, with the natural result. One day in struggling to reach the "Half-way," a tavern at the top of a bit of a rise about midway between the two towns, the boiler let out, killing the driver and one or two others, and at the same time putting back the clock of progress in respect to automobiles a good many years.

There are many other exceedingly interesting articles of an an-

tique nature, but they scarcely appeal to the automobile fraternity. It would be little pleasure to them to read descriptions of epoch-making, curling stones, or of the "gowf" clubs with which King Jamie, described by a gentleman of the same profession in France, as "the wisest fool in Christendom," was wont to drive a "long ball" in that royal game. Automobilists are more concerned about the modern side of what is a highly entertaining show. It will well repay a visit by anyone who takes an intelligent interest in the progress of human industry.

Electric Vehicle Company's Exhibit at the Pan-American Exposition

THE exhibit of the Electric Vehicle Company at the Pan-American Exposition is the largest in the number of vehicles and most complete in the varied assortment of styles of any single display made at any exposition in this country or abroad. In all there are thirty automobiles of the well known Columbia and Riker types in the company's enclosure in the Transportation Building, and several others in practical demonstration about the Exposition grounds.

Five active fields of service are included within the range of usefulness of the Columbia and Riker vehicles on exhibition. Ordinary pleasure riding about city and suburbs, long distance touring and cross-country work, transportation by means of conveyances with large seating capacity, delivery service for department stores of large cities and similar concerns and heavy trucking work. The pleasure vehicles include runabouts, phaetons, victorias, surreys and cabriolets. Vehicles of this type are equipped with new long-distance batteries, which it is claimed have a running capacity on one charge of 40 miles.

Automobiles for private and public livery service exhibited are the straight front brougham, the extension front brougham, the demi-coach, railway cab and public hansom. The broughams are built with straight and extension fronts. The former style accommodates two passengers and the latter four, in addition to the driver and attendant on front seat. They are designed preëminently for city work.

Of more ample seating capacity and intended for various forms of transportation are the six-passenger omnibus, the wagonette, the the-

atre 'bus, the break and the Wilkes-Barre 'bus. The Columbia six-passenger 'bus was designed especially as an opera 'bus, for which service it has been in active use for the last two seasons. It can be operated 35 miles on one charge at a speed of 10 miles per hour. A similar type of vehicle is made to accommodate eight passengers within, and a number of these are used as transportation conveyances. Leading hotels in Washington and Atlantic City have satisfactorily operated these latter vehicles since the Spring of 1900.

Both the Columbia and Riker delivery wagons, of which there are three on exhibition, are in operation in all the large cities of the country. They combine strength, durability, lightness, heavy carrying capacity, adequate mileage capacity and speed. They are used by dry goods houses and other concerns employing a number of vehicles for delivery purposes where the service requires the greatest dispatch, care and reliability. While these vehicles are finished in an attractive manner, they are built primarily for hard usage and to work under the most trying conditions of delivery service. The carrying capacities range from 500 to 2,000 pounds and the running capacity from 20 to 40 miles, according to the type of vehicle and the kind of batteries. Speeds from 8 to 12 miles per hour are given. Among the more prominent firms and houses who are using these vehicles may be mentioned John Wanamaker, B. Altman & Co., the Gorham Mfg. Co., Thorley, Remington Typewriter Co., Moet & Chandon, Otto Huber Brewery, Carl H. Schultz, Hackett, Carhart & Co., W. L. Douglas Shoe Co., Metropolitan Railroad Co., The R. H. White Co., The United Electric Light Co., and American Pastry and Mfg. Co. Special bodies are built for all the special requirements of delivery service.

The Gould Storage Battery Company has just issued a new edition of Catalog C. This is devoted entirely to description and illustration of the well-known Gould storage battery. This battery has a plate in which there is the greatest amount of surface contact with the active material, compatible with mechanical strength, and in which a process of "formation" is used whereby large capacity with durability is obtained. The construction of these batteries is described in detail. The catalog is profusely illustrated and ought to be read with much interest by any and all who have in any way to do with storage battery work.

A Youthful Enthusiast

IT has been noticed that automobiling, like golf, can be enjoyed by youth and old age alike. The accompanying picture shows probably the youngest automobile enthusiast on record, he being the youngest son of Winthrop E. Scarritt, well known in financial, automobile and club circles. His active, little blue-eyed, blonde, curly-haired 3-year-old boy attracts attention everywhere, his cherubic

Ellett Gibbs Scarritt

features and ways being so pronounced, but when in an automobile his charms are greatly enhanced. He clambers up alongside of his father on the driving seat and waits with expectation at the clutch being put on. His handsome and appealing countenance fairly dances when the machine begins to move, and then if the speed is not great enough, he in his characteristic baby talk calls for more. The whole scene is so pretty and yet so amusing that it cannot fail to impress anyone familiar with the beauties of refined and intelligent child life.

The machine in this picture is a 5 horse-power DeDion-Bouton Motorette, it being the first one constructed on this style. At the shops it has been named the "Scarritt" type, it being built after the ideas of the owner. The front seat in place of having a permanent back which necessitates people using it to ride backwards, is so constructed that the back can be reversed and then with a foot rest which can be let down in front, this seat holds two people comfortably both facing front. If only two people use the carriage the foot rest folds up, the back lets down and the vehicle looks as though it had been constructed specially only to have the rear or driving seat occupied. It is a very clever idea and combines the good features of a surrey without the one bad feature that four people must ride to give the carriage a good appearance.

Legal Decisions Affecting Automobiles

By W. M. SEABURY

THE decision in the case of Mason vs. West has been handed down by the Appellate Division of the New York Supreme Court for the Fourth Department. It may be remembered that this case attracted considerable attention when it was decided by Judge Sutherland of the County Court of Monroe County in the fall of 1900.

The action was commenced in the Municipal Court of the city of Rochester, in February, 1899, and was brought by Charles H. and Fred E. Mason against Jonathan West to recover damages to the horse, harness and wagon of the plaintiffs caused by the alleged negligent use of an automobile owned by Mr. West.

In October, 1898, Mr. West and his wife were riding in their automobile which was propelled by steam, generated by a gasoline burner, and passed along one of the streets of Rochester, which is about fifteen feet in width from curb to curb. The plaintiffs were engaged in the laundry business, and in delivering packages of laundry had stopped in front of a house in that street and had left the horse unattended, but held by a weight of 30 pounds attached to the bridle by a strap. The horse became frightened at the approaching automobile and ran away, the horse, wagon and harness being injured in consequence.

The Municipal Court in which the action was instituted rendered

judgment for the plaintiffs from which the defendants appealed to the County Court and there secured a reversal of the judgment. It will be remembered that the County Judge based his decision upon the statement that the horse had no right to the use of the street, and that if a horse became frightened at a new means of transportation which was becoming more and more common in the streets of our cities, the owner of the modern vehicle was not responsible for the damage done by the frightened animal.

It appeared that there was evidence before the Municipal Court which tended to show that the automobile in question gave forth a loud puffing noise that could be heard for a distance of two blocks, that the odor was pronounced, that as the carriage ran along there was a humming sound from the engine, that steam or smoke issued from the exhaust and that teams had been frightened by it on other occasions. It further appeared that at the time the automobile passed the plaintiffs' horse it was moving at a speed of 10 or 12 miles an hour, and did not slacken until the horse became frightened.

The plaintiffs appealed from the judgment of the County Court to the Appellate Division of the Supreme Court, and there obtained a reversal of the County Court judgment and an affirmance of the judgment of the Municipal Court.

In writing the opinion of the Appellate Division Justice Spring said: "That the use of the streets must become extended to meet the modern innovations of rapid locomotion is evident, and we do not mean to suggest that an automobile or any other of the present means of conveyance is an unlawful or improper user, but in this particular case that there was evidence to support the judgment of the Municipal Court."

All the justices of the Appellate Division concurred in this opinion except presiding Justice Adams who dissented upon the ground that there was no evidence in the case of negligence on the part of the defendant. The opinion of the majority of the judges of the Appellate Division leaves us, as is not infrequently the case, in a state of delightful uncertainty. The only evidence recited in the opinion upon which the decision is based is that the automobile "gave forth a loud puffing noise," that "the odor was pronounced," that "steam issued from the exhaust," and that "its engine emitted a humming sound." These features are not at all uncommon to automobiles in general. Neither was the speed at which the automobile was moving when the horse took fright, extraordinary.

It seems therefore that if an ordinary motor vehicle actually frightens a horse and the frightened animal causes damage, if the person injured can prove that the vehicle gave forth a loud puffing sound, that it emitted a humming sound from its engine, and steam from its exhaust, that he is entitled to a judgment in his favor without the slightest proof that the vehicle was improperly or negligently managed.

It is to be regretted that the presiding justice in dissenting from the opinion of the Court failed to write an opinion which might have cleared up some of the apparent inconsistencies expressed by the majority of his colleagues. (61 App. Div. 40).

It has been decided to hold what will be known as "The Automobile Club of America Sweepstakes." It is to be an international event, and the promoters have hopes of inducing some of the foreign celebrated racers to try for the incidental cash and honors. In all likelihood, this year's race will be held on the Buffalo-Erie course some time in October. About $5,000 will be divided among the one, two, three men. The club itself gives $1,000, it is said that a certain member has promised yet another $1,000, and the entry fee is $100, with an additional $50 for starters. About twenty competitors are looked for. The first to cross the line will receive 80 per cent. of the total, the second 15 per cent. and the third 5 per cent. The length of the proposed course is about 75 miles. The club, however, desires to put itself on record as holding the race "subject to the consent of the local authorities." This consent obtained, it will properly police and guard the course in the interest of the public. The slight inconvenience that may result from a brief stoppage of traffic will, so the club thinks, be amply counterbalanced by the cash which the race will bring to residents in the vicinity of the course. The entries are to be for two-person automobiles only.

The automobile exhibit at the Pan-American exposition shows the horseless carriage in all its various details. It is arranged with the idea of showing the various stages of development through which the motor carriage has passed from its earliest inception to date.

The 500-Mile Endurance Contest

FOLLOWING are the salient features of this event, which will start Monday morning, September 9, from the club house of the Automobile Club of America and terminate September 15, at Buffalo. The contest shall be open to all classes of self-propelled vehicles made in the United States or abroad, but no manufacturer, agent or private owner shall be allowed to enter more than three vehicles in any one class.

ENTRIES

The time for receiving entries will expire on August 31, 1901.

All entries must be accompanied by the following information in full:

Weight of the motor vehicle, including fuel, supplies and equipment.

Capacity of water and capacity of gasoline.

Number of miles, with the number of passengers the vehicle is able to run on ordinary roads without any replenishing of fuel or water.

Maximum and minimum rate of speed for each vehicle.

Full name of manufacturer.

Place of manufacture.

Rated horse-power of the motor, number of cylinders, bore, length of stroke and normal speed of engine.

ENTRANCE FEES

(*a*) The entrance fee for all classes, motor cycles excepted, up to and including August 15, 1901, shall be $50 for each vehicle. In the motor cycle class the entrance fee shall be $25 for each vehicle. After August 15, 10 per cent. will be added to the entrance fee for all classes.

(*b*) The entrance fees shall be paid to the treasurer of the club at the time application for entry is made.

(*c*) Any person making an entry agrees that in the event of the vehicle being disqualified or failing to take part in the Contest, the entry fee shall be retained by the club.

(*d*) The club shall have the right to refuse an entry without stating any reason.

PASSENGERS

In classes A, B and C each vehicle shall carry at least two persons. These may be changed and others substituted within the confines of any control, but if passengers be changed outside of control, the vehicle shall be subject to disqualification.

STARTING OF THE CONTEST

All entries for the Contest shall appear in person before the committee at the Automobile Club on Friday, a. m., September 6, 1901, and after giving full information as required by rule 3 (*b*), receiving their official number and being officially recorded, shall then go to a place designated by the committee and have their entry examined by the committee's representative, the carriage weighed, and an official seal affixed thereto.

CLASS LETTER AND NUMBER

(*a*) Each contesting vehicle must have securely attached to it in a conspicuous position on both front and rear, an official letter and number corresponding with the catalogue class and number. There shall be no other mark or sign on any vehicle other than the owner's initials and the manufacturer's usual name or number plate as affixed to a vehicle when sold to a customer.

(*b*) Those having charge of vehicles will be held responsible for the plates being in conspicuous positions and clearly legible.

ROAD REGULATIONS

(*a*) All vehicles going in the same direction must pass other vehicles to the left in accordance with the rules of the road, and vehicles meeting each other must pass to the right.

Vehicles must keep to the right of the center of the roadway, except when there are no approaching vehicles and the conditions are such that it is impracticable to travel on the right side of the highway. If for any reason it is necessary for vehicles to travel on the center or left side of the roadway, such vehicles must cross to the right side, irrespective of the condition of the roads, as soon as signalled by an overtaking or an approaching vehicle.

Vehicles must signal one another when approaching in either direction.

(*b*) No vehicle shall be pushed or assisted by any one other than its occupants under penalty of disqualification, except that the penalty for a vehicle being towed in any period shall be disqualification for that period.

(*c*) Contestants shall be responsible for any violation of law and for all civil and criminal penalties.

(*d*) Contestants must comply with the traffic regulations of the local police.

(*e*) If a contestant fails to stop his vehicle on request from the driver of a frightened horse, or in any manner shows himself inconsiderate of other users of the roadway, his vehicle shall be subject to disqualification.

(*f*) Contestants shall inform themselves thoroughly in regard to the route, and no allowance will be made for any mistakes they may make.

(*g*) No contestant shall take any route other than that laid down in the official maps, which will be furnished for each stage.

CONTROLS

Controls are to be officially established at the beginning of each day's run, at lunching places and at the end of each day's run. The start is to be made each morning at 8 o'clock, and an hour and a half will be allowed for luncheon. Any contestant arriving at the noon control at 12 o'clock or after will be allowed but one hour for luncheon. He will be called one hour after the time of his arrival and his time will be counted from the time that he is called; but no vehicle will be allowed to leave the noon control before 1 p. m.

The noon control will open at 11 a. m., and close at 3.40 p. m.

The night control will open at 4 p. m. and remain open until 9.20 p. m.

The time of arrival of each vehicle at the point of control shall be recorded by the officials at control on the record sheets, and also on the record book of those in charge of the vehicle.

The site of control shall be designated by a red flag with the word, prominently printed thereon in black, "CONTROL." This flag shall be prominently displayed on both sides of the road at the point of control. There shall be notification by means of a green flag at 200 yards in advance of the control point as a warning of the approach to the control.

Controls are to be established in the following manner: If a green flag is displayed, the vehicle shall slow down to a speed of not to exceed 8 miles per hour until a white flag is passed, when speed may be resumed as before. On coming to a red flag, the vehicle shall come to a full stop until the driver is permitted by the steward to proceed. At night, lanterns similarly colored may be used instead of flags.

HILL CLIMBING CONTEST

(*a*) Controls are also to be established on the Hill Climbing Contest near Little Falls, or any other place that may be chosen by the committee.

(*b*) One-half mile from the base of the hill a yellow flag, with the letter "H" thereon in black, will be prominently displayed at each side of the road as a warning of approach to the hill. A short distance from the base of the hill a second set of flags will be placed. The vehicles will line up in the order of their approach to the second flag, on the right side of the road, allowing 10 feet space between vehicles. Each vehicle will be started at a given signal by the proper official.

(*c*) The time and manner of the performance on the hill will be officially recorded. Time will also be taken on reaching the summit of the hill.

(*d*) This trial will be a separate contest. The time occupied from reaching the control at the base of the hill to leaving the control at the summit *will be deducted from the general running time.*

STARTS AND STOPS

Vehicles will be started from the control the first morning at 8 o'clock, except in Class E, which may start earlier by arrangement. At the time of starting from each control, the vehicles shall approach the starting line, and take their places one behind the other in the order of their approach to the starting line, leaving a space of at least 10 feet between each vehicle. As each vehicle starts, the others shall move up one place. Any vehicle failing to keep its position in the line shall fall out and go to the foot.

CERTIFICATES

The committee shall post the results of each day's run as soon as practicable, and may furnish the same to the press.

The certificates will recognize no speeds in excess of 15 miles an hour, but will, for a vehicle, state as follows :

Official No.
Class
Maker
Entered by
Weight
Record for day of 1901
Number of passengers carried
Route
Distance
Average miles per hour.

STAGES

The total distance is to be divided into stages for each day on the basis of approximately 85 miles per day. Following are the stages with the approximate distance :

1st Stage :	From Club House to Poughkeepsie, . . .	90 miles
2d Stage :	From Poughkeepsie to Albany, ...	70 "
3d Stage :	From Albany to Little Falls (including a Hill Climbing Trial near Little Falls) . . .	85 "
4th Stage :	From Little Falls to Syracuse, ...	85 "
5th Stage :	From Syracuse to Rochester, ...	90 "
6th Stage :	From Rochester to Buffalo, ...	80 "
	Total Distance, ...	500 miles

CLASSIFICATION AND DIVISION

Vehicles shall be divided into the following classes : All four-wheeled vehicles to carry two or more persons. Three-wheeled vehicles carrying two passengers side by side and conforming in all other respects to four-wheeled vehicles, to be provided for by special arrangement in Classes A or B.

Class A—Under 1,000 pound class : Four-wheeled motor vehicles

weighing under 1,000 pounds, in commercial running and operating condition with all tools, fuel and supplies on board.

Class B—1,000 to 2,000 pound class: Four-wheeled motor vehicles weighing between 1,000 and less than 2,000 pounds, in commercial running and operating condition, with all tools, fuel and supplies on board.

Class C—2,000 pound and over class: Four-wheeled motor vehicles weighing 2,000 pounds or over in commercial running and operating condition, with all tools, fuel and supplies on board.

Class D—Motor Cycle class: Motor bicycles, motor tricycles and motor quadricycles.

CONDITIONS

The conditions of this endurance test shall be *average speed* for the six days, and any competitor falling below an average of 8 miles per hour (except in Class E) for any one period shall not receive any credit for that period.

AWARDS

Certificates shall be awarded by the club as follows:

First Class Certificate: Average speed from 12 to 15 miles per hour.

Second Class Certificate: Average speed from 10 to 12 miles per hour.

Third Class Certificate: Average speed from 8 to 10 miles per hour.

PUBLIC DELIVERY VEHICLES

shall be classified as follows:

Class E—Light Delivery: Load not less than 500 pounds, exclusive of operators, fuel and water.

10 to 12 miles an hour for First Class Certificate.
8 " 10 " " " " Second " "
6 " 8 " " " " Third " "

Heavy Delivery: Load to be not less than one-half rated capacity. Minimum to be not less than 1,500 pounds.

8 to 10 miles an hour for First Class Certificate.
6 " 8 " " " " Second " "
4 " 6 " " " " Third " "

Trucks: Load to be not less than one-half rated capacity. Minimum load to be not less than 3,000 pounds.

6½ to 8 miles per hour for First Class Certificate.
5 " 6½ " " " " Second " "
3½ " 5 " " " " Third " "

What the Automobile Club of America Has Done in Two Years

By MALCOLM W. FORD

THIS month commemorates the second anniversary of the birthday of the Automobile Club of America. When it is considered how young this organization is, and what a factor it has grown to be in the automobile industry, the results can hardly fail to impress one as being remarkable. It is but natural that the club should be a forceful element in the sport or recreation side of automobiling ; but it is not only strong in this branch. Its doings are valued by the industrial side to such an extent that its strength in this line is unquestioned. The inference is not meant to be given that the manufacturers at large control their output by a demand from club members, for compared in numbers with the mass of general automobile users, the membership of the club is insignificant ; but the A. C. of A. furnishes such a natural rendezvous for makers and users that many ideas emanating from its lounging room are bound to be instructive to those who follow automobiling in any conceivable way. The club does not seek the prominence which the industry has unconsciously given it, and it is safe to say it wears the honors as gracefully as an organization can.

The origin of the club dates back to an informal talk at luncheon at the Lawyers Club where Whitney Lyon met for the first time George F. Chamberlin by appointment made over the telephone. Mr. Lyon's brother, who knew Mr. Chamberlin in a business way, had heard the latter speak of automobiles and had remarked that his brother Whitney, who was very much interested in the same subject, should meet Mr. Chamberlin ; hence the appointment Mr. Chamberlin made over the "phone." At their first interview Mr. Lyon, in response to Mr. Chamberlin's suggestion that an antomobile club might be timely, said, "If you'll draught a call I'll run the meeting." Following is the call, which was sent to those known to be interested in the horseless vehicle. It was also published in the public press.

NEW YORK, June 1, 1899.

Dear Sir : At the request of a number of owners of automobiles, it is my pleasure to call a meeting at the Waldorf-Astoria, on Wed-

nesday evening, June 7th, at 8:30 o'clock, for the purpose of an informal discussion as to the feasibility of organizing an automobile club in this city.

In view of the rapidly increasing number of those who own and operate self-propelled pleasure vehicles in this country and the general wide-spread interest in the subject both here and abroad, and the almost certain use of the automobile as a form of sport in the United States, and the difficulty of procuring proper storage and care for the vehicles, it has been thought desirable to call this meeting of owners or intending owners of these vehicles, for a conference looking toward the formation of a club which, in due time, shall have a club-house, where the carriages may be properly stored and cared for by competent mechanics, and where may be found also a library of literature upon the development of the automobile, as well as suitable meeting rooms for social intercourse and general interchange of views upon the subject.

Mr. George F. Chamberlin

It is proposed to restrict the membership to owners, of good social standing, and to strictly eliminate any trade interests, following the general lines which have been so successful in establishing the well-known organizations abroad.

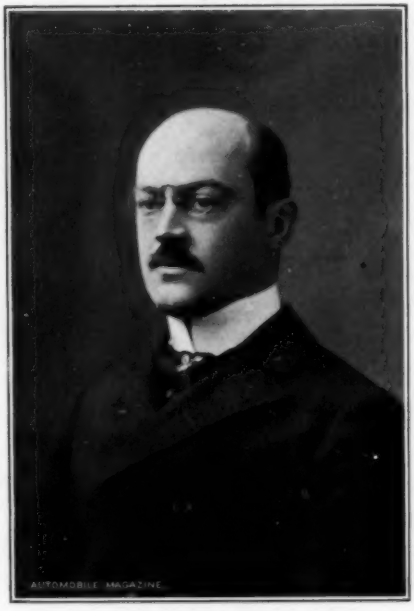
We would be pleased to see with you at this meeting any of your friends who are owners or who expect to be owners of automobiles, who are seriously interested in the organization of the proposed club. Any suggestions you may have in mind, helpful to the organization, will be appreciated. Yours respectfully,

WHITNEY LYON.

Thirty-four people attended the call which was held in the State room of the Waldorf-Astoria. The meeting resulted in organization and on August 2, 1899, articles of incorporation were signed, and on August 16 they were filed with the County Clerk. The seven other

directors for the first year besides Mr. Chamberlin and Mr. Lyon were Winslow E. Buzby, Frank C. Hollister, Captain Homer W. Hedge, William H. Hall, V. Everit Macy, General George Moore Smith and Charles R. Flint.

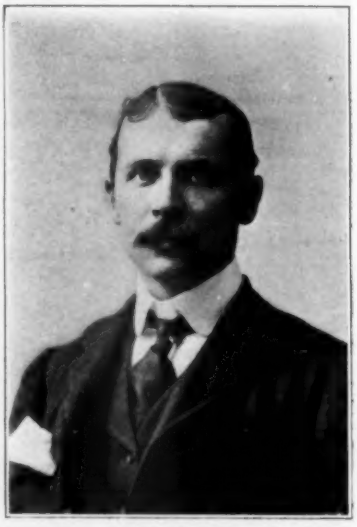
The first officers were as follows: President, General Avery D. Andrews; vice-president, George F. Chamberlin; Secretary, Captain Homer W. Hedge; Treasurer, Walter E. Frew. The membership was rapidly added to and quarters were taken in the big hotel the club was organized in. These rooms were retained for a year and a half, or until February, 1901, when the club moved to its present rooms on the second floor of the Plaza Bank Building, 753 Fifth Avenue, corner of Fifty-eighth Street. It is quite likely that the club will stay in the new rooms for some time, they being leased for three years. The club also has two options of retaining them of one year each, making, so far as the club's desire is concerned, a five years' lease, with the privilege of vacating at the end of three years from last February. It is doubtful if a better location for club purposes could be found, so far as combining a handsome site that is also central. The site is handsome because diagonally in front is the large open space known as the Plaza. This is paved with asphalt and is bounded on the west by the spacious Plaza Hotel, on the north by Central Park with its main entrance and surrounding shrubbery, on the east by the Netherlands and Savoy Hotels, and on the south by the residence occupied by Mrs. Cornelius Vanderbilt, this structure with its grounds being regarded as the most elaborate exteriorly in New York City. The view from the club windows cannot be duplicated by any



Capt. Homer W. Hedge

other club in the city, the scenes continually being witnessed from them combining everything that a big city can furnish in the way of unique and handsome driving, automobiling, equestrianism and pedestrianism.

Hardly had the club been started than work of various kinds seemed to come before it. Its organizers little thought that by the time there were enough members to make them feel the club were a fact, so many things would appear which the club seemed eminently fitted to carry through successfully. One of the first moves was to secure recognition from foreign automobile organizations which enabled members to get certain privileges while traveling in England, France and Germany which otherwise could not be obtained. Then while the infant club was still busy getting members, perfecting its practical workings, choosing committees, etc., ideas at its councils had been so focused that there was a demand for an endurance trial, and in the spring of 1900 the first test of this kind was made in a run from New York to Philadelphia. Other runs had been held around and outside the city, but this Philadelphia one was the first organized attempt to demonstrate what the 1900 horseless vehicle could do in a practical and thereby a commercial way. This trial served to open the eyes of many who had grown sanguine about the range and beauties of automobiling and as a result many were rudely awakened as to what could be accomplished with the automobile as then constructed. Suffice to say the results of this test were healthful and far reaching, even though they were not pleasing to some nor scientific.



Mr. George Isham Scott

The next test the club made was one of speed, which was also held in the spring of 1900. This was a 50-mile road race on the level surface of Long Island, the course being from Springfield to Babylon and

return. The result of this trial was more fruitful than the Philadelphia run, although the speed did not come up to expectations. It was, however, the first road race ever held in America and was watched with great interest. The time of the winner, Andrew L. Riker, on an electric machine showed that the rate traveled was about 27 miles per hour. As was the case in the run to Philadelphia, many machines failed to finish this 50-mile race, both through weakness of construction and poor manipulation on the part of those who drove them.

These two trials did more in a short space of time to accustom the general public with automobiling than all other events had accomplished in this line during the preceding several years or when the self-propelling vehicle first became a certainty in this country. This showed that the club although less than a year old was already handling the subject in a way that brought it into great prominence and placed it as a sport on a basis of importance that compares favorably with such a high-class one as yachting.

Mr. A. L. Riker

In the Fall of 1900, the club held the first automobile exhibition at Madison Square Garden. Nothing but good to everyone concerned resulted from this show and as an extra educator to the mass it fulfilled its mission in a way considerably beyond the expectations of its promoters.

All of these events advertised the new subject so strongly that hostile elements commenced showing themselves. The first of these was the enforcing of an edict against the carrying of gasoline on vessels transporting passengers. It was an old United States statute and was originally framed to prevent explosives being carried in bulk or as freight in vessels which also took passengers. It seemed foolish to

apply it to automobiles carrying a comparatively small quantity of gasoline, but still on account of a ruling from Washington the transportation companies throughout the country were compelled to observe it. Nothing but changing the statute at Washington could remedy the difficulty, but suffice to say the club succeeded in doing this. It prepared a bill and in several months after it was introduced into Congress, it passed both Houses and became a law formally by the President's signature being affixed to it, and when the outdoor season opened last Spring ferryboats willingly transported the same vehicles with full gasoline tanks that previously they would only take with empty tanks.

When it is considered that a United States statute was changed, the quickness with which the club's bill was put through is impressive, especially when it is thought how much legislation for the general good is often delayed. The influence of the club showed itself by the many letters it caused to be sent to Congress and the Senate about the bill. Even though common sense was on the side of the bill, yet it is doubtful if it would have gone through with such apparent alacrity had not a powerful influence such as the club was able to furnish been back of it.

The next important step was the sidetracking of a movement beginning in the Empire State which threatened to throw a cloud over the industry and sport of automobiling. A bill was introduced at Albany giving the right to the Boards of Supervisors of each county to limit the speed of automobiles as they saw fit. Had this bill gone through other States would probably have followed the example of New York and the result would have been that most of the counties in most States would allow a different speed limit and the touring automobilist would be compelled to study the laws of each separate county he passed through if he wished to avoid all possibility of exceeding the legal limit. For instance, Nassau county might allow automobiles to travel at the rate of 12 miles an hour. Suffolk county might allow 16 miles per hour, and some other county might have its limit at 10 miles per hour. It would have been perplexing, to say the least, but the club forestalled this legislation that threatened to complicate things so and prepared a compromise bill that was finally passed allowing the supervisors to make their own speed laws but prohibiting the enforcing of a slower speed than 15 miles per hour.

This rate of traveling, although not causing enthusiasm upon the part of automobilists who like to travel very fast, is satisfactory to the

mass of users, for a speed within several miles above or below that figure is as fast as most owners generally wish to travel. Local county laws may now be passed limiting speed all the way from 15 miles up, but not over one autoist in ten will feel compelled to worry about the pace he may be taking, because a speed of 15 miles per hour soon

Mr. Harlan W. Whipple

gets a community used to looking at a rate of 20 miles per hour with the same equanimity that 15 miles was at first observed.

Another feature of the bill the club put through at Albany is that it throws the parks open to all classes of automobiles where previously most of them could be used only by electric machines, park commissioners having barred steam and gasoline. That this "legislative in-

terference," as they called it, did not please some park commissioners was shown by a most absurd ruling made in the premier American city. Central Park had permitted only electric machines to use its beautiful drives and almost the very day Governor Odell signed the bill permitting all automobiles under certain restrictions to enter parks, an edict regarding the use of the one in New York city was issued. The gist of this was that automobiles should not go faster than 3½ miles an hour in the park when a horse vehicle was in sight. This was taken first with surprise, then by righteous indignation, but at the end with amusement by automobilists. They were indignant, because it would virtually mean that no automobile could travel through the park faster than a horse could walk for at no time would a horse vehicle be out of sight unless it were at a late hour at night. Had the edict been observed it would have killed automobiling in the park. The club's law committee acted promptly. No threats were made and no unnecessary talking was done about the park resolution which showed such spite and animus. It was immediately resolved to make a test case and several of the good workers of the club volunteered to run the risk of being arrested.

Mr. J. C. McCoy

The park commissioners were notified that the club considered their new rules an evasion of the spirit of the bill just passed at Albany, which gave equal rights to horses and automobiles. The commissioners were also informed that on a certain date some automobilists would travel on their machines through the park at a faster rate then 3½ miles an hour and unless stopped would proceed at the full limit allowed to horses, which is 7 miles an hour. True to their statement, Albert C. Bostwick with James C. Church and George F. Chamberlin with Albert R. Shattuck entered the park in automobiles, nodded to the officers at the gate and continued on the spacious

drives at the enjoyable rate of at least 7 miles per hour. Plenty of park policemen on foot were passed and mounted policemen looked at them in an indifferent way, but no sign was made which denoted that an arrest would be made. Readers will remember how the daily press at the time teemed with funny accounts of alleged conversations said to have taken place between Mr. Bostwick, Mr. Chamberlin, the park policemen, park commissioners and other dignitaries regarding the efforts made by the automobilists to be arrested, but nothing was done. The truth of this deliberate slighting of their supposed official duty by the park policemen will never be known, but the probabilities are that the park commissioners being taken by surprise by the move of the club members to "beard the lion in his den," withdrew their bluff, countermanded the order quickly, and advised policemen on that particular day not to hinder the automobilists. It was a complete and dignified victory for the club, and ever since then automobiles of all descriptions have enjoyed equal privileges of speed with the horse in Central Park.

Mr. Dave H. Morris

The closing of this event brings the doings of the club right up to date, and just at present there are three important subjects which the club is at work on. One of these is an alliance with different automobile clubs of this country for the purpose of receiving co-operation and giving in return representation in any move the club may make, whether it be in sport, industry or legislation. So far the A. C. of A. has been looked upon as the parent automobile organization, most of the others in America having been patterned after it. The club could undoubtedly continue to enjoy this premier position for some time to come; but unless some affiliation with far-away clubs is made, such a proposition will in time be forced upon it, this country being too large to have an organization with only a local membership entirely con-

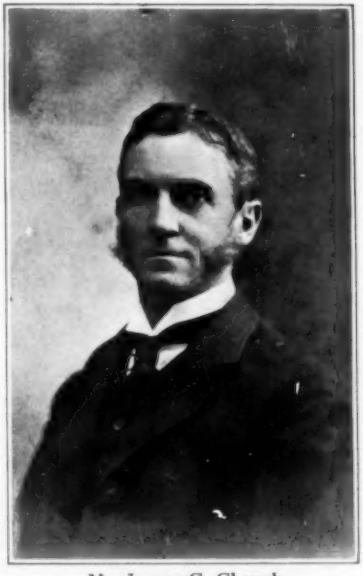
trol a subject of such importance. Just what this affiliation will consist of cannot be said, for as yet no plan has been decided upon. It is safe to say, however, that its terms will comprise an arrangement whereby different clubs in the country will become divisions of the A. C. of A. For instance, the Chicago Automobile Club may be known as the Chicago Division of the Automobile Club of America. It is not likely that all automobile clubs of the country will become affiliated on that basis, for if such were done there would be altogether too many divisions to permit of prompt or effective management. On investigation it may be found that other automobile clubs outside the A. C. of A. do not wish representation in the general doings of the subject, but if the reverse is found to be the case the A. C. of A. is ready to co-operate with them in building up an organization which will be broader and more general in its range of action than even the parent club has so far been.

The next subject of importance now engrossing a certain club committee is the 500-mile endurance contest to Buffalo, details and conditions of which will be found elsewhere in this issue. This event has been looked forward to by many automobile manufacturers as being one which may prove certain features in carriages that will be more valuable to the general industry than any other data which has yet been obtained through either a speed or endurance trial. The practical management of a huge test like this is something that few can appreciate, but the active committee having it in charge realize how much credit will redound to the club if brilliant and effective results are produced, and it is therefore fair to assume that at the conclusion of the trial the club, as a result of the committee's work will be stronger than ever with all classes of automobile users.

Another proposition undertaken by the club is the holding of a series of automobile events at the Pan-American Exposition during the week following the conclusion of the 500-mile endurance contest. The committee having this in charge is a representative one. The events will be held in the Stadium in the Exposition grounds, and will consist in starting and stopping contests, tests of consumption of fuel, etc., hill climbing, passing through obstacles, besides other events of a gymkana nature. There will also be held in connection with these sports the second large road race ever given in this country, the course being from Erie to Buffalo, which is in the neighborhood of 75 or 80 miles in length. A member of the committee having these events in charge informs the writer that the world-renowned Henri

Fournier will be a contestant in this race, and will probably use the celebrated vehicle that won him victory this year from Paris to Bordeaux and from Paris to Berlin. It is also proposed to hold yearly a road race of this distance.

The committee plans to start this much-talked-of contest at Erie and have it finish just outside of Buffalo, because no speeding can take place in that city. Then the contestants can ride to the Stadium in the order in which they passed the finishing post. The Pan-American authorities will arrange to have the line of the race patrolled on that day just as is done in France, so that there will be nothing to hinder the contestants from letting themselves and their machines out to their fullest extent. Just how fast the course can be traveled is mere conjecture, but the general opinion of those who are familiar with the road is that the average will not be so high as was done in France this year. There is no question, however, that the winner of the Erie-Buffalo race will be forced to go faster than any automobilist has yet traveled in this country on a road, and it is expected that thousands of people will line the course and witness a practical trial of continued speed that will be unquestioned as to its merit and validity.



Mr. James C. Church

When the club is through with these Buffalo events only a few weeks will elapse before it will again be before the public in the shape of holding its second annual automobile exhibition at Madison Square Garden. With the increase of general interest in the subject and the manufacture of a greater variety of self-propelling vehicles, the coming second show should be even more successful than the first. Just about at that time the annual meeting of the club will be held for the election of new officers and three new governors in place of the three present ones whose terms expire then. The proba-

bilities are that many officers and committeemen who have served the club this year will be found doing the same in 1902. These experienced officials with the addition of new material will be in a still better position to bring honor to their organization, and it will probably be even greater in extent than that which promises to be so conspicuous at the end of this season.

The club's officers up to the second annual election next fall are as follows: President, Albert R. Shattuck; First Vice-President, Albert C. Bostwick; Second Vice-President, David Wolfe Bishop; Third Vice-President, J. Dunbar Wright; Treasurer, Jefferson Seligman. There is no club secretary at present, the previous one, the writer, having been forced to relinquish the position on account of its duties becoming onerous through the sickness and unexpected death of the Assistant Secretary, Frederick W. Tousey. There is now a salaried secretary to the Governors, S. M. Butler filling the position. In the future this official will be known as the Secretary of the Club, the by-laws having recently been changed to admit this, but he will not be a member of the Board of Governors. Mr. Butler is well versed in automobiling and his office needs just such a person. The by-laws have also been changed so that the Treasurer is now a member ex-officio of the Board of Governors, just as the Secretary used to be. The President and First Vice-President are also members ex-officio of the Board. The nine Governors for this year are Winslow E. Buzby, General George Moore Smith, Sydney Dillon Ripley, Dave H. Morris, George F. Chamberlin, William H. Hall, V. Everit Macy, Juan M. Ceballos and George Isham Scott.

The important committees of the club revised to date are as follows, the Chairman being the first mentioned:

Law and Ordinances—George F. Chamberlin, James C. Church, Dave H. Morris.

Technical—Cornelius J. Field, Andrew L. Riker, Dr. S. S. Wheeler, Samuel T. Davis, Jr., Professor Robert H. Thurston, H. Ward Leonard, T. C. Martin, and the writer.

Runs and Tours—Dave H. Morris, J. C. McCoy, Albert C. Bostwick, J. Dunbar Wright, Dr. J. Grant Lyman, George Isham Scott, Winthrop E. Scarritt.

Racing—Albert C. Bostwick, Dave H. Morris, David Wolfe Bishop.

House—Percy Owen, Samuel H. Valentine, Bradford B. McGregor, Samuel T. Davis, Jr., and the writer.

Membership—General George Moore Smith, Juan M. Ceballos, V. Everit Macy, Sydney Dillon Ripley.

Foreign Relations—Clarence Gray Dinsmore, David Wolfe Bishop, Hart O. Berg, J. Dunbar Wright.

Albany Post Road—Joseph M. Hill, Colonel John Jacob Astor, Amzi L. Barber, Ernesto G. Fabbri, Samuel T. Davis, Jr.

Buffalo Endurance Test—William M. Power, Harlan W. Whipple, Winthrop E. Scarritt.

Pan-American Automobile Events—Albert C. Bostwick, John Aspinwall, J. C. McCoy, Dr. Truman J. Martin.

The Electric Vehicle Company, of New York, has just issued what we consider the most sensible catalog that has appeared for some time. Its make-up is sensible inasmuch as it endeavors to give information which prospective purchasers desire. It describes with considerable detail the Company's gasoline runabouts. It includes three sheets, one illustrating the motor, another ignition and cooling systems, and a third the general mechanism. The catalog is divided into five sections. The various parts are taken up and described fully. No pains have been spared to present all information which an automobilist is likely to be looking for. The operation of the carbureter and ignition system are gone into. Those not familiar with the cycle of operations of a gasoline motor would find much valuable data in this new catalog. A copy will gladly be sent to those making application.

The Moran Flexible Steam Joint Company, of Louisville, Ky., had at the Master Mechanics' Convention at Saratoga an exhibit of various kinds of flexible joints, some of them being designed for automobiles. Among these was a most ingenious appliance, which is a combination of throttle valve, safety valve and what they call a compensating pipe which adjusts itself to different length of pipe connections, being capable of lengthening or shortening the connection. A feature about the throttle valve and safety valve which will appeal to automobilists is that they are always steam tight and require no packing.

A Long Run by a Storage Battery

THOSE who are looking forward to a further perfecting of the storage battery will be interested in reading of a trial made in England June 11, by the British and Foreign Electrical Vehicle Company. One of their large vehicles, fitted on the Krieger system, made a successful run from London to Reading and back, the whole distance covered by the car from the time it left home till its return, amounting to upwards of 94 miles. This very considerable run was made on a single charge, and was undertaken for the purpose of experimentally demonstrating that all the demands which can be made upon a car designed for use in the neighborhood of a town can be adequately fulfilled by the modern electric vehicle. The actual distance covered does not break the record—of what has been already done on a single charge—a somewhat longer journey having been made under similar conditions on the Continent ; but it does very clearly show that a capably constructed electric car can run on a single charge as far as anybody can reasonably require it to do.

Good Performance of Exide Battery

A MARK XII Columbia Runabout, owned by Mr. George Howard, Treasurer of the National Safe Deposit, Savings and Trust Company, of Washington, D. C., and equipped with new Exide battery, recently made the journey from Washington to Baltimore on one charge, under conditions that made the trip a remarkable one from the point of battery endurance. An automobile run had been planned from Washington to Baltimore that day, but the falling rain and heavy condition of the roads kept every vehicle from starting except the Columbia Runabout, in which were Otto Jacobi and Charles Baxter. When Baltimore was reached the cyclometer indicated a run of 44 miles, and 8 miles of this distance was over roads that required an excessive amount of current to keep the vehicle in motion. This section of the road is described as one of layers of mud and sand over rough fillings of broken stone ; in some places the mud was so deep that the motor was covered. There was sufficient current left to carry the vehicle several miles around Baltimore when the vehicle reached that city, bringing the total mileage on one charge up to 50. The condition of the roads prevented any attempt at speeding.

Morristown's Heavy Penalty for Speed

MORRISTOWN, N. J., has taken up the automobile speed question by passing an ordinance which unexpectedly took a different turn from the one it was originally framed to follow. On account of the fast driving of automobiles, enough feeling was engendered to cause the township council to pass a law limiting the rate of speed which vehicles can travel over the city streets. The ordinance was introduced by William R. Cook, who is the owner of fast horse flesh and who generally travels behind his trotters through the village streets at twice the rate of speed the town law now allows. Mr. Cook framed the resolution on account of meeting an automobile which caused his horse to take fright and run, horse and rig only being saved from an accident by good driving.

When the new ordinance, which restricted automobiles, came before the Board there were enough automobile partisans to have the law apply to horses as well as horseless vehicles and in spite of protests on the part of the father of the resolution the amendment was made. The new law does not allow a faster rate for both kinds of vehicles than 6 miles an hour and the punishment for being caught going faster is $1,000 fine. This is such a severe penalty and the speed allowed is so low that it will be interesting to observe what the results will be.

Among the Clubs

(*Secretaries of clubs and chairmen of committees are requested to send in items of news for use in this department.*)

On the afternoon of Monday, June 10, Lord Kingsburgh, Lord Justice Clerk of Scotland, in his capacity of president of the Automobile Club of Scotland, presided over an influential meeting of automobilists in Glasgow which had been called together for the purpose of forming a Western Branch. It was decided that the branch should be formed and a committee of leading men was elected to carry this into effect. This branch will be of invaluable assistance to the Automobile Club of Great Britain and Ireland during the week of races and trials in connection with the Glasgow Exhibition early in September.

Syracuse, N. Y.—We began with a membership of thirty and our first club run was held June 19, to South Bay, a beautiful resort on the shores of Oneida Lake. This is an ideal run of about 13 miles over the famous Cicero plank course. The club will be very active owing to the increased membership over last year, and we shall work very hard on the "good roads" question. Tourists will find a welcome hand here and with the Syracuse Automobile Company they can find excellent accommodations for storage, repairs, charging, etc.

FREDERICK H. ELLIOTT,
Secy. and Treas.

Bridgeport, Conn.—Vice-President Louis Cassier and Treasurer T. E. Griffin of the Automobile Club of Bridgeport carried the club pennant in the invitation run of the Massachusetts Automobile Club from Boston to Sharon, June 17. Mr. Griffin also took several prizes in the races of the Automobile Club of New England at Brookline, Mass., June 15. He used a Locomobile.

Secretary F. W. Bolande and Geo. W. Hills of the Board of Governors of the Automobile Club of Bridgeport sailed for Europe on the "Vaderland" June 26. They expect to visit France, Switzerland, Italy, Austria, Germany, Holland, Belgium, England and Scotland during their two months trip. They will have an eye out for the various types of automobiles to be found in foreign cities.

The following is the list of runs and tours which have been arranged by this club for the present year:

Sunday, July 28—New Haven and Savin Rock. Start Seaside Park, 11 a. m.; dinner, Colonial Inn, 2 p. m.

Sunday, August 4—Newtown. Start Seaside Park, 10 a. m.; dinner, Newtown Inn.

Sunday, August 18—Stamford. Start Seaside Park, 10 a. m.; dinner, 1 p. m., hotel.

Sunday, Sept. 1—Invitation run to Beachside Inn, Green Farms. Start Seaside Park, 10 a. m.

Monday, Sept. 2 (Labor Day)—Grand automobile race meet at Seaside Park, 2.30 p. m., arrangement of Runs and Tours Committee.

Sunday, Sept. 7—Woodmont. Start Atlantic Hotel, 3 p. m.; shore dinner at hotel.

Saturday, Sept. 14 and Sunday, Sept. 15—Newtown. Start Atlantic Hotel, 3 p. m.; stop at Newtown Inn.

Saturday, September 21—Greens Farms. Start Fairfield and Park Avenues, 4 p. m.; dinner at Beachside Inn, 6 p. m.

Saturday, Sept. 28—Westport. Start Seaside Park, 3 p. m.; New England Supper, Westport Hotel.

Sunday, October 6—Derby. Start Seaside Park, 10 a. m.; dinner at hotel.

Tuesday, October 15—Milford. Start Atlantic Hotel, 4 p. m.; supper at hotel.

Sunday, October 20—Danbury. Start Seaside Park, 9 a. m.; dinner at hotel.

Thursday, October 31—Run into country and return to Atlantic Hotel to dinner, 6 p. m.; start Seaside Park at 4 p. m.

Thanksgiving Day, Nov. 25—Morning run into the country and back before dinner; start Atlantic Hotel, 10 a. m.

ARTHUR K. L. WATSON,
C. BARNUM SEELEY,
THOMAS E. GRIFFIN,
Runs and Tours Committee.

Brooklyn, N. Y.—The rapid growth of the Long Island Automobile Club has rendered the old club rooms inadequate and new quarters have been secured at 1190 Fulton Street, with adequate storage facilities at 1239 Fulton Street (nearly opposite). The Entertainment Committee of the club, on the evening of Wednesday, June 19, held an informal housewarming. A very pleasant entertainment was provided and light refreshments served.

CHAS. W. SPURR, Secretary.

Chicago, Ill.—As the result of some adverse criticism regarding the reckless driving of certain members of the Chicago Automobile Club the secretary thereof has issued the following rules, which he asserts must be strictly observed:

Vehicles will leave the clubhouse in single file, maintaining the position assigned them at the start.

Maintain at least 50 feet between vehicles.

Keep your position in line.

Do not pass preceding vehicle, unless latter is disabled.

A pacemaker will be supplied, who will set the speed.

Boston, Mass.—There is still considerable talk in the air as to the union of Boston's two automobile clubs. The matter has been discussed very freely at meetings of both organizations. Matters went so far at the meeting of the Massachusetts Club as to lead to the appointment of a committee to arrange with the committee of the New England Club, looking to a union.

Racing Rules of the Automobile Club of America

INTERPRETATION OF WORDS AND PHRASES

1. A "Recognized Meeting" is a meeting held under a license granted by the Automobile Club of America, or under the sanction of any authority whose jurisdiction is recognized by the Automobile Club of America, and which gives effect to sentences imposed by the last named club.

2. "Automobile" means any carriage propelled by mechanical means.

3. A "Driver" is the occupant of an automobile in a race, who has the exclusive control thereof.

4. The "Racing Committee" is the committee chosen by the Board of Governors of the Automobile Club of America to whom they have delegated the supervision of all races within the jurisdiction of the club.

5. By "Organizer" is meant any association or club licensed by the Automobile Club of America to organize a race meeting.

6. A "Nominator" is the person in whose name an automobile is entered for a race.

7. An "Owner" is one who owns the whole or any part of an automobile.

8. A "Race" is a speed test sanctioned by the authorities in the first paragraph, and it is the spirit of these rules that it is won by a combination of the driver and the automobile, who must not be separated during the race.

9. A "Walk-over" is when two automobiles, in entirely different interests, do not compete for a race.

10. A "Month" means a calendar month, and a "Day" twenty-four hours.

RACE PROGRAM

11. The program for proposed races together with all the necessary matters in relation to it, shall be sent to the Racing Committee for their approval.

12. The program shall contain (1) the number of prizes and their value, (2) the amount of entrance fee, (3) the amount of forfeit, if any, (4) the place at which entries are received, (5) the date and hour of closing of entries, (6) the distance, (7) the manner of starting, (8) a classification of automobiles for the race in question, and (9) the complete and exact itinerary if it be a road race.

13. After publication of the program, no modification shall be made as regards prizes or the nature of the races announced. Mention shall be made on the first page that the meeting is held under the rules of the Automobile Club of America. In a road race no change of itinerary shall be made without the consent of the Racing Committee.

14. A copy of the program and rules shall be sent to each competitor on the acceptance of his entry.

REGULATIONS FOR RACE MEETINGS

15. The number of starters in a track race shall be limited by the width of the track at the starting post. Between every automobile there shall be a space of at least two feet.

16. In case of fire or other reasons, races may be run over another course.

17. If any one races at any unrecognized meeting, he is disqualified for all races to which these rules apply.

POWERS OF THE GOVERNORS

18. Powers of the Governors of the Automobile Club of America. They shall, at their discretion, grant and withdraw licenses.

19. They shall, at their discretion, veto the appointment of any racing official.

20. They shall have charge of the forfeit list.

21. They shall inquire into and deal with any matter relating to racing, and disqualify any person concerned in any fraudulent practice.

22. At their discretion they may hear cases on appeal, or make any ruling or decision of their own motion or at the suggestion of another, and their decision shall be final.

STEWARDS

23. Whenever the word steward or stewards is used, it means steward or stewards of the meeting in question or their duly appointed deputy or deputies.

24. The stewards for each meeting shall be appointed subject to the approval of the Racing Committee.

25. Each steward may appoint a deputy in case of necessity or emergency.

26. Every complaint shall be made to the stewards in writing, signed by the complainant.

27. The stewards shall have full power to vary or alter or make any arrangements for a meeting which they deem advisable.

28. The stewards shall have power to regulate the conduct of officials, owners and drivers for the best interests of the sport, and to this end, they may disqualify, suspend or punish at their discretion, and subject any person to a fine not exceeding $100, for conduct which they may deem injurious to the sport.

29. The stewards may have races, where there are too many entries, run in heats. They shall arrange the heats in semi-final and final, and from their decision there can be no appeal.

OFFICIALS OF MEETINGS

30. The officials of a meeting shall be appointed subject to the veto of the racing committee.

31. The starter shall give all orders necessary for securing a fair start.

32. He shall report to the stewards any conduct injurious to the sport.

33. For establishing records on any track or road, the organizers shall have a qualified surveyor prepare a certificate of measurement.

34. The judges shall occupy the judge's box at the time the automobiles pass the winning post, and their sole duty shall be to place the automobiles. They shall announce their decision immediately, which shall be final, unless an objection to the winner or the second

automobile is made and sustained. This rule shall not prevent the judges from correcting any mistakes.

35. The winning of a race is judged by the front wheel or wheels of all automobiles.

ENTRIES, DECLARATIONS, RULES, ETC.

36. Every person racing under these rules is required to know them, and he agrees to accept, without dispute, the decision of the stewards on any question relating to the race or racing.

37. The entries of any person may be refused at the discretion of the stewards or of the racing committee.

38. The entries shall close at the advertised time, and no entry shall be admitted thereafter. No entry shall be accepted unless accompanied by the proper fee.

39. Entries and declarations shall be made in writing signed by the owner. The organizers shall provide blanks for these purposes.

40. Entries and declarations made by telegraph shall be equally binding, on condition the entry fee or forfeit immediately follows the telegram.

41. No one shall be allowed to race under an assumed name.

42. No sign or advertisement shall be displayed on any automobile.

43. If the hour is not stated, entries may be mailed or telegraphed up to midnight of the day of closing.

44. At the discretion of the proper authorities, proofs may be required as to the time of sending the entry.

45. Competitors shall be responsible for all damages, civil or criminal.

46. The forfeit list shall contain the names of persons from whom arrears are due.

QUALIFICATION OF STARTERS

47. So long as the name of a person is on this list, he shall not be allowed to take part in any race, and any one taking part in such race, through error or otherwise, shall be *ipso facto* disqualified there from.

48. No one shall be qualified to start in a race unless he has been announced as a starter and has complied with all the conditions of the program and is not on the forfeit list.

49. No one shall take part in a race unless the stewards are satisfied as to his qualifications to handle his automobile.

50. Every owner who is scheduled to start in a race and who does not do so must explain his conduct to the satisfaction of the stewards, otherwise he is subject to a penalty.

STARTING

51. Any driver not at the post, ready to start on the scheduled time, shall be fined.

52. The position of each automobile when starting shall be determined by lot. A start may be made as follows: (1) Standing. (2) Standing and at intervals. (3) Flying. (4) Flying and at intervals.

53. Once in the hands of the starter, no automobile shall receive any further care except from its driver.

54. A start in front of the starting post is void.

55. A starter shall have authority over all drivers necessary for securing a fair start, and any attempt to take an unfair advantage shall be punished by him, subject to appeal to the stewards.

56. A leading automobile is entitled to any part of the course, but when there is a clear opening on each side of him, he shall not impede another automobile by crossing so as to compel the latter to slow up.

RUNNING

57. Any one crossing over so as to impede his opponent, shall be disqualified, unless the one impeded was also guilty of a like intent.

58. Any one impeding another shall be disqualified, unless the one impeded was partly in fault, or the trouble was solely caused by the fault of some other one in the race.

59. Any one who slows up with a view to complain, or who complains frivolously, may be punished.

60. Any intentional foul driving shall disqualify the guilty person, and also any one in league with him.

61. If a race has been run over a wrong course or a wrong distance, or when the judges were not in the stand, the race shall be run over again.

62. In walk-overs, the automobile shall go over the whole course, and in a long-distance race it must do so within a given time, if deemed advisable.

63. In heat racing, any driver obliged to leave the track by reason of an accident, cannot be allowed to compete in another heat.

64. Any one leaving the track, must start again at the point where he went off.

65. In road races, the approach of a competing vehicle must be notified by a horn or bell.

66. In record races, vehicles with two seats need carry only one passenger, but in all other races two passengers are compulsory.

67. Competitors must make themselves acquainted with the route, and no allowance will be made for mistakes. Moreover, if any competitor takes a shorter or easier route, other than the one prescribed, he will be disqualified. The stewards shall be the sole judges of the comparative distance or ease of the routes followed.

DEAD HEATS

68. In a dead heat the prizes shall be equally divided.

69. When the dividing owners cannot agree as to which shall have the cup or other prize which cannot be divided, the question shall be determined by lot what sum of money shall be paid by the owner who takes such cup or other indivisible prize to the other owner.

70. On a dead heat for a match, the match is off.

DISPUTES, APPEALS, ETC.

71. Every objection shall be decided by the stewards, subject to appeal to the Racing Committee.

72. The Racing Committee may call upon any one under their jurisdiction for his assistance.

73. Every objection must be made to the stewards in writing and signed by the one who objects.

74. No objection may be withdrawn without leave.

75. All costs and expenses in relation to any objection or inquiry shall be paid by such person causing the same to be made, and in such proportions as the board shall direct.

76. A deposit of $25 may be required before any objection will be entertained, which may be forfeited if the objection is deemed frivolous or vexatious or if the objection is not sustained.

77. An objection to the distance of the course officially designated must be made before the race.

78. Protests shall be made as follows: (1) Protests as to classi-

fication of competitors or machines or as to validity of entry and payment of entrance fees, before the race. (2) Protest as to unfair running, errors of route, or any other irregularities on the route; within twenty-four hours after the race. (3) Protests as to fraudulent starting of a competitor in a race for which he was not qualified, eight days after the race. (4) Protests in races on the road, eight days after the finish of the races. (5) Any other protest, within twenty-four hours after the race, unless otherwise provided.

79. The right of protest is in each competitor, but the stewards at their discretion may always interfere officially.

80. A competitor lodging a protest must substantiate it, and the one against whom the protest is lodged has the right of being heard in opposition thereto.

81. Any corrupt practices or conspiracies shall be punished by the stewards subject to appeal.

82. Where no penalty is specified, the Racing Committee shall have power to impose any at their discretion, and they may modify, change or omit any penalty, disqualification or fine imposed.

83. In any case not provided for by these rules, it shall be determined by the Racing Committee in such manner as they think best and conformable to the usages of the sport.

84. No cognizance of bets is taken.

85. The interpretation of these rules by the Racing Committee shall be final, except as provided for in Rule 23.

86. These rules may be amended at the pleasure of the Board of Governors.

An Interesting Tour

IT is with great pleasure that we on another page present three illustrations of Miss Vera H. Butler seated in her 5 horse-power Renault voiturette. Recently this lady, accompanied by her father, drove this carriage 1,500 miles between Paris and Nice. On the return trip the route lay through the following towns: Digne, Grenoble, Chalon and Avallon.

During the stay at Nice Miss Butler drove her machine to the Grand Chartreuse, one of the highest roads in France. The altitude of this road is about 4,000 ft., and it is covered with snow. Several times in making the descent the car fairly tobogganed into snow drifts. So treach-

erous was the deep snow, it was found necessary to place branches along the road so as to allow the wheels to get a grip. That such a journey should be full of interest is of course evident. The route lay through some stretches of very beautiful scenery, from groves of cacti and orange trees to snow-clad mountain roads.

The photographs from which our illustrations were made were kindly sent to us by Miss Butler's father. They are of interest not only as such but as showing the reliability and simplicity of the modern automobile, in that a lady could successfully drive one from one end of France to another without the least trouble and under road conditions which were anything but the best.

Crossing the Alps. Between Nice and Monte Carlo. Ascent of La Turbie.

More About Power of Automobiles

THE question of power is always an interesting one, and there is still another point which is too often lost sight of in discussing it. Most of us think of a 10 horse-power carriage as being able to develop that power under all conditions. If it could there would be little trouble as to hill climbing or navigating bad roads.

Horse-power depends on three things: The size of your cylinder, the pressure exerted in it (by either gas or steam) and the speed at which it runs. For the most part we only have to do with speed in this case. For easy figuring suppose our engine develops 10 horse-power at 1,000 revolutions, or a horse-power for every 100 revolutions if the horse-power is the same at all times. Suppose again we have a two-speed clutch, in the gasoline carriage, one for 10 and the other for 20 miles per hour. Then to get full power we must run either at 10 or 20 miles an hour. With the low gear clutch in action we cannot go above 10 miles an hour and if we cannot take a hill at this rate and the carriage slows down, the motor loses speed and consequently power. Running at 5 miles an hour the motor can only run 500 revolutions or half power, and the same is true at 15 miles an hour with the high gear in action. At 10 miles an hour the engine is giving full power, but if we increase to 12 miles, by high gear clutch and throttling engine, the motor must be slowed down to 200 revolutions and consequently only give 2 horse-power. This, perhaps, will make clear some of the power questions that have bothered us.

In the steam carriage the same applies, except that there is no clutch and consequently only one point where the engine gives most power, namely, maximum speed of carriage.

The French and English builders who put in four changes of speed

have the advantage over the two-speed clutch in getting the full power of their carriage at various rates of speed. But, of course, they add complication and wearing parts. What is sorely needed for all kinds of vehicles, steam, gasoline or electric, is a variable speed device which will give any ratio desired between the driving and driven shafts, or in other words, between the motor and carriage. This will enable the engine to be run at the maximum speed (full power) and still get any desired speed of carriage. Hills would then lose their terrors and bad roads be easily managed. The Dietrich device you mentioned sometime ago came the nearest to that of anything I know of. What has become of it?

PASSAIC, N. J. HENRY C. FRANKLIN.

About Back Firing

I WAS much interested in reading your brief description of the Packard machine, particularly the part relating to the governing of the spark. This arrangement, as I understand it, makes it impossible to give an advanced spark or early ignition at slow speed and consequently at starting.

The advantage of this is recalled by a friend of mine who has a machine with a fixed point of ignition, which of course must be somewhat advanced at times for good results. In starting up the other day his machine back fired and he is nursing a broken arm in consequence. This won't stop his motoring, but, as I understand the Packard device, such an accident with it would be impossible, the motor having a governor.

Now, I don't wish to boom any machine, and haven't one with this device, but it does seem as though something of the kind would be desirable. With the hand-controlled spark this could not occur unless you accidentally left the sparking lever in the advanced position when starting.

Before closing, I would like to ask whether any of your readers can give me his or her experience with hot tube ignition.

NEW YORK, N. Y. FRANK C. HUDSON.

Compound Engines

THE Peerless Long Distance Steam Carriage Company, of Washington, D. C., is building quite a line of steam specialties, but particular attention should be called to their compound engine of the marine type. These engines are fitted with either Timpken roller bearings or plain bearings as may be desired. Lignum vitæ shoes are used in cross heads instead of metal. All engines are carefully tested before shipment and made on the interchangeable system, thus insuring easy duplication.

The 7 horse-power machine weighs 140 pounds and is of the following dimensions; height 22 inches, 20 inches wide and 9 inches deep. The high pressure cylinder is 2½ inches, while the low pressure is 5 inches. They are built in various sizes depending upon the service in which they are to be used.

Correct Figures of Fournier's Car

MUCH has been written about the Mors car that Henri Fournier has driven to such signal victories on two occasions this year. All kinds of figures and details have been printed about it, the horse-power having been stated to be anywhere from 20 to 60, and the weight all the way from 2,000 pounds to 3,000 pounds. Revolutions of the motor have been given at from 500 to 1,500 per minute. As this car will undoubtedly be seen in this country in September, the following correct statistics of it cannot fail to be interesting.

The motor has four vertical cylinders and ignition is by a magneto. The rated horse-power is 28. This figure is the computed one, but the actual power delivered to the axle is considerably in excess of this. It may be recalled that there have been a number of rated 12 horse-power Panhard-Levassor machines seen in this country this spring which judging by the number of passengers they could easily carry up a grade clearly proved that the actual power of their motors was considerably more than 12; but a figure for computation must be given and the analysis used so far for getting the power of

gas engines shows that 12 is right for these Panhards and that 28 is right for Fournier's flyer.

The probabilities are that Fournier has at times obtained over 40 horse-power out of his motor. He has four speeds. The second speed, at 700 revolutions per minute, is calculated to give 28 miles per hour. The motor with ignition fully advanced makes 1,100 revolutions per minute. At this speed of motor the second speed would give about 44 miles per hour. The fourth speed, at 700 revolutions per minute, should give 66.2 miles per hour, and at 1,100 revolutions per minute, 93 miles per hour. The car with two people in it weighs about 2,400 pounds.

Across France on a Racer

(Continued from page 670).

LAST month we published a part of Mr. Sennett's article with the above title and are pleased to present herewith another portion of his interestingly written story.

Dogs, no matter what color, are *bêtes noires* to the racer, and the question is often asked, "What is the best thing to do when one sees that the dog is bent upon either opposing your progress or on measuring his pace with your carriage?" Our reply is, that usually shouting is worse than useless, but that the most efficacious thing is to gesticulate vigorously, as if throwing a missile at the canine competitor. He will then generally deviate to one or the other side of the road, and possibly to reflect that he would quickly have been out of the running as well as out of this world had he essayed to remain in front. Continental cycle tourists, as we can testify from considerable experience, were much inconvenienced from the same cause, and it is found that shouting, and even the business-like whip carried upon the cycle in Austria, were of little effect until the pyrotechnist came to the cyclist's aid with those ingenious little fireworks which made him the terror of the dog instead of the dog the terror of him.

From a high-speed run much might be learned in the domain of zoology. Why, for example, dogs should have a predilection for sleeping in the middle of the road and a tantalizingly sluggish addiction to remove themselves from rapidly approaching sudden death, the ordinary *chauffeur* understands not. Animal idiosyncrasies are

clearly displayed to the motorist ; the militant audacity of the dog, the painfully nervous tension of the horse, the delicious contempt and imperturbability of the ass, the crass stupidity of the omnipresent fowl or cockerel, who invariably has an appointment to keep on the opposite side of the road at the moment when your car is within five yards of him, with the result that a catherine-wheel of feathers is seen to gyrate over *poulet à l'automobile*. The "stupid" goose, who is not so stupid after all, seeing that he merely stands by the roadside, temporarily converting his curved neck into a straight red-tipped pipe, from which he belches forth hissing defiance as we pass. In this he reads a lesson to the more stupid duck, whose characteristic seems to be her power of waddling clear of danger without hurrying. We remember an old Cornish post-driver offering to present us with a sovereign if he drove over a duck, "For," said he, "I have driven for thirty years and have not yet succeeded." The stupidity of animals, however, is not to be compared with that of many bipeds in charge of quadrupeds. The horse, though such a noble creature, is at the same time a dependent creature : he can be made to do almost anything by sympathetic companionship. Every motor driver knows that horses seldom misbehave when in company with their four-footed *confrères*. For this reason a gentle word and friendly caress from his master will in ninety-nine cases out of a hundred suffice to dispel from the animal's mind all thought of coming danger. The fact that his master stands by him and speaks to him contents him. But does the master usually treat his horse in this common-sense manner? Not according to our experience! The willing animal is left absolutely unattended and often with his bit removed—a practice which we feel should be made punishable by law—the horseless carriage is heard approaching, his master rushes out of the taproom alongside his horse, to whom he speaks never a word, and clutches violently at the animal's head with an abruptness that would startle any human body, much less a horse. Should the driver be in a cart he usually finds himself with more than half a yard of "slack" in his reins, enabling him the more effectively to "job" his horse's mouth in gathering them up taut—and his horse almost on to his haunches, and, having done this, he finds his hands one on either side of his head and behind his ears, and therefore in the worst possible condition to control his horse, who by that time is trying to do the most sensible thing that a horse can do—viz., to turn completely round and run away from the oncoming danger.

The automobile of to-day provides an effective means of high

speed, common road transport. It is no longer a toy and should no longer be considered as an entity to be utilized as an exhilarating pastime alone. For in addition to this it is ready for efficient service in peace or in war, in pleasurable personal transport, in the despatch of mails, and in the expeditious forwarding of merchandise ; nevertheless, the next year or two will, without doubt, bring material developments. Wherein these developments will evince themselves is matter open to discussion. There can be no doubt, however, that where improvement is most necessary is in the tires and in the gearing. Very material improvement has been made in high-speed internal combustion engines, but little that is laudatory is to be chronicled in regard to the *engrenage*. It is certainly disheartening to the builder of high-class motors to feel that not more than fifty or sixty per cent. of the power of his motor ever reaches the road wheels. The system of step by step speeds controlled by the engagement of spur gearing and its release by a formidable clutch is, as a French manufacturer put it, *brusque et brutale*. Obviously what is wanted is a gear that will at all times be in mesh and yet be capable of an indefinite variation in its ratio from zero to the maximum speed of the vehicle.

With regard to the tires, these are from every point of view the most unsatisfactory component of the automobile's anatomy. They are expensive, both in prime cost and up-keep ; they are fickle and uncertain in the extreme, whilst they are productive of that which, above all other things, conspires to rob the automobilist of his enjoyment, viz., "side-slip," or as our French friends say, *dérapage*. We feel, however, the sins of "side-slip" are often visited unmerited upon the pneumatic tire, and that mitigation, to a certain extent, will be effected by an improvement in vehicular design. The London omnibus has, unhappily, no pneumatic tires, yet it is very prone to indulge in this *glissant* skittishness. To entirely obliterate trouble, and we do not hesitate to say danger, from "side-slip," radical change of design is demanded, viz., the adoption of fore-carriage traction instead of rear-wheel propulsion. We are, however, persuaded that material modification would attend the employment of all four wheels as steerers. Every racing driver finds that the danger of splitting his cover in rapidly rounding corners is a real one. In this regard also we feel that the racer of the future will be fitted with larger wheels—all steering, and all of the same size—and all furnished with tires of the same diameter. For it is far more important in bad road traveling to prevent the tires of the steering wheels from descending into ruts

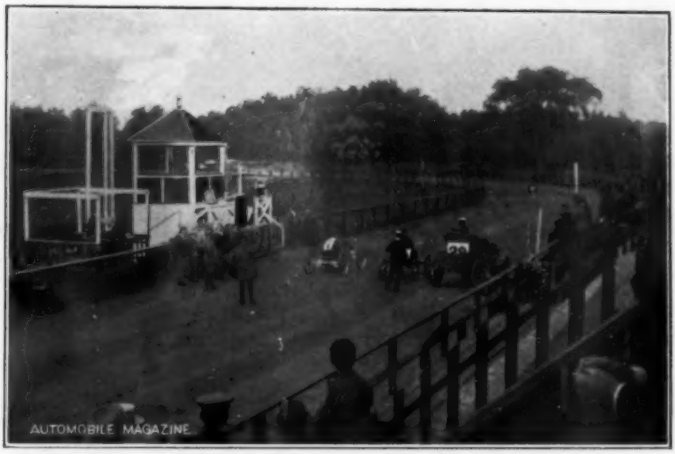
and depressions than it is the trailing wheels. The increase of diameter of the two wheels should act beneficially upon the life of the tires, firstly, by reason of the number of revolutions for a journey of given length being decreased; secondly, in regard to the "rush" of the contained air. This, although its velocity may remain the same, would be advantageously effected from the fact that its heat emissivity would be accelerated by reason of the increased area exposed to radiation. The generation of heat from this cause on high-speed runs is surprising, and the careful chauffeur should not omit every opportunity of passing his hands round his tires, not only to ascertain their temperature, but also to localize the miscellaneous foreign substances, such as nails, pieces of barbed wire, and the like so often to be found secreting themselves with uncommendable modesty in the treads.

The reduction of weight is a desideratum more easily desired than effected, for great speeds spell great strength, and this applies to the ordinary touring carriage as well as to the racer; for the most desirable characteristic of the traveling carriage is that it shall be equipped with ample power and thus made capable of doing up-hill work at the Parliamentary limit. The reduction in weight should be set about with more common sense than is displayed in many ways, but in particular with reference to providing covers to the chain wheel pinions, which, when allowed to remain uncovered, are a source of great danger. The mudguards also should, in our opinion, receive more attention from the makers, and should be mounted in the form usual upon cycles, for the waste of horse-power, by the use of such very wide "wings" as are employed upon the steering wheels, must be considerable.

Automobile Events at Boston

By O. L. STEVENS

IT was a big automobile race meet on Saturday afternoon, June 15, that opened the series of events given under the auspices of the Automobile Club of New England, which has its club house just across the street from the track of The Country Club of Brookline. The club used its own house and finely-fitted stables for the preparatory arrangements of the meet, and ran the races on the track of its



Start of Speed Championship Contest for Anderson Cup

neighbor, heretofore sacred to horses' hoofs, but for once rolled smooth and hard as a floor.

Ten events were run off, but the great race of the afternoon was the final contest between the three vehicles making the best time in the preceding races, excepting tricycles. This race brought together a peculiar but wonderfully powerful and speedy electric racer from New York, managed by A. L. Riker ; a DeDion-Bouton gasoline quadricycle racer ; and the new 18 horse-power Hyde Park gasoline machine just turned out by James T. Robinson, Jr., in imitation of the English Napier. Mr. Larz Anderson's new 40 horse-power Winton racer which did a mile early in the day in practice in con-

siderably better than 2 minutes, would have been in this final race had it not suffered a mysterious accident while contesting in the heavy gasoline class with the Robinson vehicle. The electric machine proved itself the wonder of the day by winning the Anderson cup offered for this final event, doing the 5 miles in 8 minutes 47½ seconds. It was operated by Messrs. Adams and Alden of the Elizabethport, N. J., station. It consisted merely of a steel frame, hung at about the level of the top of the wheels, with its batteries even below this, and the seats merely cushions on which a man could sit with his feet braced out sideways. The steering lever was T shaped, like that of an old-fashioned double-runner coaster, and it offered practically little resistance to the wind. Mr. Riker told the AUTOMOBILE MAGAZINE correspondent that the machine had never been used before anywhere and it had about 40 horse-power. K. A. Skinner on the DeDion quadricycle took second place without difficulty, but was nowhere compared to the electric "Spider." The Robinson vehicle was outclassed, and made a comparatively slow third, though its time in the qualifying race had been 12 minutes 31½ seconds for the 5 miles.

The meet was in charge of Mr. Henry Howard, Secretary George McQuesten and Mr. Knight Neftel of the club, as a racing committee, and the judges were Mr. A. W. Stedman, the club president; Mr. Frederick Tudor, Jr., and Mr. Royal R. Sheldon. Mr. Knight Neftel acted as Captain of the Course and Mr. F. E. DeSousa as clerk.

It was a great scene all that afternoon around the neighborhood of the club house. Carriages were rolling in and out of the gateways of the track and club-house grounds, the elms that shade the beautiful streets resounding to the chug-chug of the gasoline rigs or to the hissing of the steamers. For once, horse rigs were in the minority around the track and the yard of the Automobile Club, where a temporary engine kept an electric recharging plant in operation. Mr. Riker's big red van used in towing the racer to and from the track occupied a prominent place near the stable door.

Next morning, in a bright sunshine that put the dull gray of Saturday to shame, the club members returned from their homes to the club house again bright and early for a run with their guests and participants in the meet to the Eastern Yacht Club at Marblehead Neck. Sixteen carriages were in line, headed by Mr. Howard as pacemaker in his Locomobile. The route was through Cambridge, Somerville, the Middlesex Fells Parkway, Malden, Saugus and Lynn, to Swampscott and Marblehead. Some of the carriages were delayed a bit in the

start, however, and went down in practically separate detachments, one being headed by Mr. Royal R. Sheldon in his Packard gasoline, and the other by Mr. and Mrs. McQuesten in a Locomobile. Mr. Ernest Rueter of the Massachusetts Club, and lady, and Mr. E. Bryan in a Knox gasoline, were among those to follow Mr. Sheldon, who by taking a route slightly nearer the coast than that of the original party caught up with them just outside of the Linden district in Malden. Mr. and Mrs. McQuesten escorted Mr. and Mrs. Riker, who went down in an electric runabout. These secondary detachments avoided much of the dust of the leaders, who made the latter part of the run

Carriages Assembling

at a smart pace and stirred up a tremendous lot of this loose soil. Even President Stedman, who went down in a handsome Gasmobile with Mr. James McNaughtan, got enough of this before Lynn was reached and fell to the rear, accompanying Mr. Sheldon through the beautiful Ocean Street neighborhood in passing through the Shoe City. George Banker, who had come over from Pittsburg, was with Louis Chevrolet in the smart little red De Dion motorette; J. H. McAlman, Tom Griffin and Vice-President Louis Cassier, of the Bridgeport Club, were in Locomobiles; Harry Fosdick and Fred Wilson occupied Mobiles; Messrs. Underhill and Fowler in their three-wheeler Knox —it got the name of the "go-cart" before it had been half an hour

out—were among the leaders from the start, and they kept close enough together to look like white-haired veterans from their thick coating of dust by the time the club house was reached. Ben. Smith, in a handsome yellow 12 horse-power Packard, was also well to the fore, and Mr. and Mrs. C. J. Reuter, of the Massachusetts Club, though starting early, let their Winton drift to the rear as the leaders got more and more lively. There were two or three slight accidents on the road, but everybody arrived on time.

Dinner was served in the club dining room, in splendid style, and was a thorough success, although one or two of the professional people present made the short-sighted mistake of "talking shop" to the disgust of some of the club members and the majority of the other professionals. But it was a beautiful day, and those who were out for pleasure had their reward. A majority of the party returned from the club house direct to the city, but a smaller party made up of Mr. and Mrs. Riker, Mr. and Mrs. McQuesten, Mr. A. W. Stedman, Mr. Sheldon, Mr. McNaughtan and the AUTOMOBILE MAGAZINE correspondent became the guests at dinner of Mr. Charles F. Wright, at the quaint little club house on Misery Island, at the mouth of Salem harbor. All but Mr. and Mrs. McQuesten and Mr. and Mrs. Riker went round by way of the Beverly road to a point where a boat could be taken direct for the island; but the quartet mentioned went across by water direct from the Yacht Club. The curious "Custom House" as well as the beautiful sunset sea views amused and pleased Mr. Wright's guests, and it was not until after dark that they took the little steamer for the water trip to Beverly Bridge, whence they went to Boston by rail.

The holiday, Monday, was the day of the Massachusetts Automobile Club, and well did that club take advantage of it. Never before in New England has such an array of horseless carriages appeared together as on that run of 23 miles to Lake Massapoag, in Sharon. There were sixty of them, steamers and gasoline rigs, that started from in front of the Boston Public Library in Copley Square in the morning, crowding so thickly that it was impossible to get them all in any photograph of ordinary proportions, and stringing out into a line half a mile long as they wound out through the beautiful park system under the leadership of President J. Ransom Bridge, of Boston, and Mrs. Bridge in a handsome Mobile. Secretary L. E. Knott with Mrs. Knott was second, and Mr. Warren L. Maxcy, acting as lieutenant, sprinted up and down the long line getting it started, his carriage be-

ing marked with a red pennant. The procession kept in fine formation and traveled at a gait of about 10 miles per hour until it had passed the shadow of the big Blue Hill in Milton and was almost into Canton. There the halt for water was made, and while the steamers were filling their tanks, the gasoline rigs shot ahead and from there to the lake had a lively though unauthorized road race, the first five to finish being K. A. Skinner, in a De Dion ; Ben. Smith and E. H. Shattuck, in a 12 horse-power Packard ; Leon Morrell, of Norwood,

Carriages Assembled at Massapoag Lake Hotel. J. Ransom Bridge in Foreground (Touching Tree)

in a Stanley Brothers' steamer ; Newton Crane, in a 12 horse-power Winton ; and Harry Fosdick in a Mobile dos-a-dos, carrying George Lowe, Charles Fay and William Corcoran, of the Chronograph Club, which did the timing for the "stunts," later. Others were not slow to follow them, and the average time for the run was 2 hours.

It was a veritable throng of carriages that covered the lawn under the fine old trees near the hotel, and as if the sixty were not enough, before the dinner hour in came thirty more from Providence and Worcester, bringing members of the Rhode Island and Worcester

clubs. Mr. Coleman, of Coleman Brothers, came up from Providence in a handsome electric stanhope, winning plaudits for his hardihood and skill on all sides. Dr. J. A. Chase, G. W. Bunnell, Jr., B. S. Clarke, J. E. Blake, F. C. Fletcher, Joseph Fletcher, Dr. F. B. Carlton, R. L. Lippett, Daniel Case, H. G. Martin, H. P. Coleman, L. F. Pease, W. A. Robinson, F. G. Chase, H. E. Burdick, G. H. Bliss, and Frederick Bliss were the Rhode Island men present; and J. W. Bigelow, W. J. H. Nourse, O. M. Saville, B. A. Robinson, R. G. Bicknell, J. L. Rhodes and John Harrington came from Worcester. In all, 210 members and guests of the Massachusetts club sat down to dinner together in the hotel dining room.

Dinner over at half past three, the piazza filled with ladies and the lawns with men, and on the broad drive in front of the hotel the "stunts" commenced. A slow race started the series, much to the disgust of Chevrolet, the speedy Frenchman, who thinks a slow race "no good," even though he won second prize. The obstacle race was fairly interesting, but the palm for amusement should be accorded to the coat and waistcoat race, in which the spectators shouted with laughter to see the contestants stopping beside a post, hurriedly removing a coat or waistcoat and turning it inside out, mounting and riding on, only to repeat the performance or reverse it until they reached the starting place again with clothes on and properly buttoned. The see-saw contest was amusing, too, though it was won by Mr. Morrell by a lucky dash in his steam carriage. It was something of a spectacle to see Mr. George Alley approach and climb the incline leisurely in his Winton, and leisurely try for a proper teeter as his carriage hung suspended.

The stunts were in charge of Messrs. Harry Fosdick and Ernest Rew. George Banker acted as starter. Dr. Stedman and Dr. Quigley were the judges, and Dr. Rolfe was referee. Steins, cups, flasks, drinking cups, with blue, red and white ribbons, served as souvenirs, and though the club did not pretend to offer any formidable prizes the souvenirs were contested for with spirit.

Not the least interesting sight on the grounds while the stunts were in progress was the portable automobile repair outfit which was brought out over the road in a steam Mobile delivery wagon, the first in Boston, by some of Harry Fosdick's men. Their services were a boon to more than one luckless chauffeur who was ready to take time from the more enjoyable features of the afternoon in order to be well prepared for the long run home. All but this repair wagon and one

or two Mobiles and the big 18 horse-power American Napier carriage of J. T. Robinson, which came in very late in the afternoon from Hyde Park, had left the grounds by six o'clock, and the arrivals in Boston were recorded all the way from eight o'clock until half past nine.

These festivities will be repeated hereafter as an annual event by both clubs, if the two do not unite before another summer—and a union seems to be one of the probable outcomes of this enjoyable three-day series.

Philadelphia to Baltimore

MR. E. B. Gallaher, vice-president of the Searchmont Motor Company, sends us an interesting account of a trip he recently took through the Blue Ridge Mountains on the way from Philadelphia to Baltimore. The distance covered was about 180 miles, 80% of which was hilly. The only mishap on the entire run was the puncture of a tire, which occurred 28 miles outside of Baltimore. Not being able to repair it or get it repaired by the local bicycle man it was necessary to run on a flat tire for the distance named. The route selected by Mr. Gallaher and his companion is one which has been tried before by a number of automobilists, but this is the first time the run has been made successfully.

They had as a running companion a small experimental 8 horse-power machine. On this was carried an ice chest which furnished the travelers with ice water and other cool drinkables. The whole affair was a decided success and the performance of both machines more than exceeded the expectations of Mr. Gallaher.

An Example in Road Building

THE good roads movement originally agitated by the League of American Wheelmen and latterly greatly reinforced by automobiling has resulted in some very practical lessons being given this year. The National Good Roads Association, assisted by Director Mr. Martin Dodge, Director of the Government Bureau of Public Roads Inquiries, and various individuals interested in the improve-

Condition of Road April 26, 1901

ment of our public highways, has given the people of the Middle West and South a very practical object lesson in the construction and the value of good roads. They have built improved highways at the very doors of the people in a number of communities in the Mississippi Valley, showing them by actual example how to make fine modern highways out of the materials which they have at hand.

The illustrations show a place on Carrollton Avenue just outside of New Orleans. The avenue runs through very low ground and was hardly worthy to be called a street, no attempt ever having been made to grade it. It was practically impassable for the greater portion of the year. It was decided to build a dirt road using only the materials at hand—a lumpy clay baked almost to solidity by the sun.

This was the soil upon which the men and machinery of the traveling Good Roads train were put to work. A sixteen-mule team was hitched to the principal machine—a scraper—and it tore through the sun-baked soil, ploughing up a broad furrow from the side of the street, throwing it upon a conveyor which in turn deposited it on the middle of the roadway. Under the unfavorable conditions encountered the machine moved more than one hundred yards of earth per hour and did the work of more than fifty men with teams, plows and scrapers.

Same Road, April 27, 1901. Result of One Day's Work

Behind this road-builder came harrows to break up and evenly distribute the earth and then rollers to press it down. At the end of two days the city had a fine stretch of well-built, comparatively waterproof road a mile in length in place of the impassable "avenue."

The city officials gave their hearty co-operation and furnished prison labor and sixteen mule teams with drivers. The achievement was viewed with astonishment by the citizens of New Orleans, who had

come to consider this particular portion of their street system as hopeless. No crushed rocks, shells or other foreign materials were used in making this road and it is not regarded by the Government experts in charge as being by any means an ideal highway. But it is interesting and highly instructive as showing what may be accomplished with the most accessible material.

Lunkenheimer Oil Cup

THE Lunkenheimer Company, of Cincinnati, is placing upon the market a lubricator especially designed for use on automobiles. Referring to cut, the slide *A* screws down on and around lid of cup, having a loose plug which covers the filling hole when the slide is swung to a closed position. This loose plug is so arranged that wear on same can be adjusted by turning down screw *B*.

Lunkenheimer Cup

To properly lubricate any engine is to many quite a problem. It would seem that this cup of the Lunkenheimer Company is quite able to fill the bill. The workmanship is of the very best. The construction is amply strong and the slide can be depended upon to retain its position for an indefinite period when once set.

The matter of properly lubricating the various parts of an automobile is one which sometimes gives much trouble. In this connection we take pleasure in referring our readers to the lubricants manufactured by Wm. P. Miller's Sons, 100 Greenpoint Ave., Brooklyn. These are put up in such form as to be convenient for carrying. They contain no mica, graphite, or any gummy substances. It is claimed that these lubricants are unaffected by water, dust or climatic conditions, and can be easily cleaned from the chain, leaving it bright and free from all dirt. A valuable feature claimed for the bearing and light gear lubricants is that when applied to polished metal they will absolutely prevent rust. Those owners of motor vehicles on which chains are used will find these lubricants to be all that is claimed for them.

Some New Automobile Track Records

ON July 4, 5 and 6 the Gentlemen's Driving and Field Club held a carnival of sports at Elkwood Park, near Long Branch, N. J. The middle day was set apart chiefly for automobile events but most of them were abandoned on account of a storm interfering with the afternoon's program. There was, however, enough done before the track became a quagmire to more than repay the

Albert C. Bostwick Doing One Mile in 1:16¾

many who were in attendance. Dr. H. H. Kane, the president of the club, said he had looked forward to some fine work being done by the automobilists and he was not disappointed, although, as it turned out, there was but one electrifying display of speed.

Elkwood Park track is one lap to the mile and is not constructed so that a real fast automobile can be allowed full sway on it. The banking of the turns is scarcely perceptible and although satisfactory for running or trotting horses, fast automobiles are forced to slow up

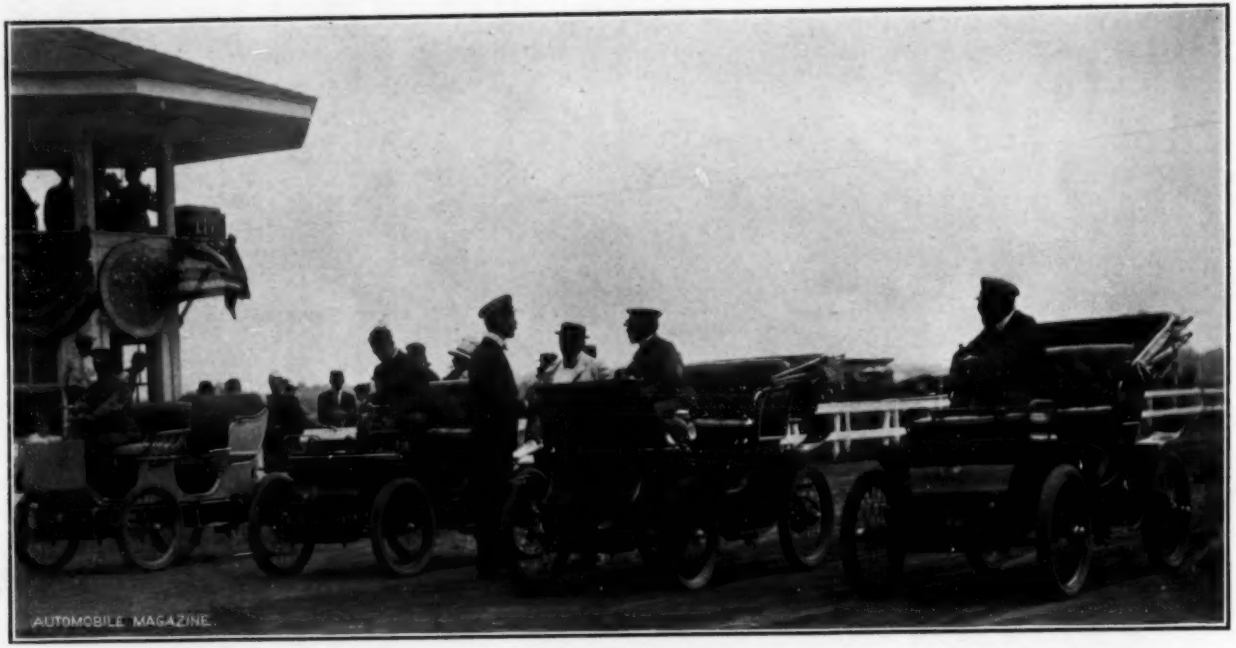
until the straight sides are met again. In spite of this handicap to speed a mile was made faster than has yet been recorded on a track in this country. Albert C. Bostwick in a new 40 horse-power Winton car made the circuit in 1 minute 16¾ seconds on the middle mile of a three-mile spurt. This figure now constitutes an authentic American record for a track, it beating Mr. Bostwick's own previous best, made last year at Guttenburg, by 9 seconds.

The frontispiece in this issue shows the record breaking vehicle as it appeared that day on the track. Exteriorly it is a plain looking machine, it differing only in this respect from the ordinary type of Wintons by having a considerably longer wheel base and being a little heavier in general appearance. The picture showing Mr. Bostwick at speed in this car was snapped on him when he was about fifty feet in front of the line when the watches were clicked on him at 1 minute 16¾ seconds for the middle and record mile. Continuing on, he finished the third and last mile in 1 minute 17 seconds, only ¼ of a second slower than the previous one. The first mile in this spurt was traveled in 1 minute 18¾ seconds, each of the 3 miles beating the previous mile record. The timers were Dr. Herman B. Baruch and the editor of this magazine.

Analysis of Mr. Bostwick's performance divided into quarter miles will afford a good basis for other speed automobilists to work upon. The times are as follows: ¼ mile, 20½ seconds; ½ mile, 38½ seconds; ¾ mile, 58½ seconds; 1 mile, 1 minute 18¾ seconds; 1¼ miles, 1 minute 33¾ seconds; 1½ miles, 1 minute 57¾ seconds; 1¾ miles, 2 minutes 16¼ seconds; 2 miles, 2 minutes 35½ seconds; 2¼ miles, 2 minutes 54½ seconds; 2½ miles, 3 minutes 13¾ seconds; 2¾ miles, 3 minutes 31½ seconds; 3 miles, 3 minutes 52½ seconds.

It will be noticed that the fastest quarter was between 2½ and 2¾ miles, when the 440 yards were traversed in 17¾ seconds. Among the twelve figures are track records for this country for twelve distances. The figures are as follows: ¼ mile, 17¾ seconds; ½ mile, 37 seconds, this being made between 2¼ miles and 2¾ miles; ¾ mile, 56 seconds, this being made between 2 miles and 2¾ miles; 1 mile, 1 minute 16¾ seconds. All the records for distances from 1¼ miles to 3 miles inclusive follow above in the order they are printed.

Mr. Bostwick's performance was really better than it appears on paper. In the first place the surface of the track was not firm, although it was not so heavy as would be a course given up entirely to running horses. The loose part was about one inch in depth and even though



Jefferson Seligman's Carriage

Mr. Gillett

Ed. Wassermann's Carriage

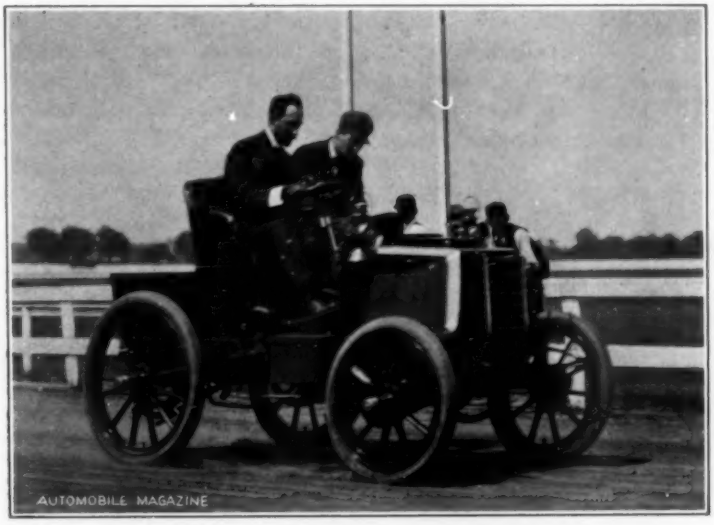
Dr. Edwin Sternberger

the tires on the machine speeded were large, still a resistance all the time of one inch of loose soil is bound to make a difference. If the same power had been used on a hard rolled dirt or clay track the figures representing the times would surely be smaller. The loose surface was specially noticed while rounding the turns, the wheels slipping considerably, causing the whole machine to skid enough to compel the driver to quickly let up a little. In speaking of this part, Andrew L. Riker, who witnessed the performance, said he did not think an automobilist could do himself justice at speed on a track unless it were at least five miles in circuit, enabling turns to be laid out which would hardly show a curve at all.

Another point that militated somewhat against getting all that was possible out of the machine is the fact that it is a new one, and although Mr. Bostwick has seldom impressed people as being slow to learn the fine points of a new automobile, yet the probabilities are he is not quite as well acquainted with his latest flyer as he will be in the near future. On being questioned about this, Mr. Bostwick could not say if this point were important, he intimating that perhaps after he had run the machine more he might be able to get still better results out of it. He is of the opinion that he can take his machine almost any day on Elkwood Park track, when the weather and course are favorable, and reduce the mile record several seconds below the figures he has just made.

Percy Owen, who, it might be supposed, was a most interested spectator of the speed trial, said he was not surprised at the result, and did not think that good as the new records are they represent what the machine will do some day. Mr. Owen said that a special addition had been made to the Winton factory to build these new 40 horse-power cars, and that from a mechanical standpoint so far as fitting is concerned he did not see how they could be improved. The first one delivered was sent to Captain Larz Anderson, of Weld, Brookline, Mass., but he was unable to use it at the recent races held there on account of some misadjustment. These cars are by far the speediest yet made in this country and their records this fall will be watched with interest. Their motors have two horizontal cylinders set opposite each other and the vibration when running is practically a minimum. They have an unusually large water cooling surface in front and Mr. Owen says that this part controlling the smooth running of the motor is destined to never give any trouble merely on account of its ample proportions.

One of the accompanying pictures shows a Panhard-Levassor machine with a Boulogne body. The vehicle is a trifle shorter than others of this make which have appeared in this country, but its owner, B. M. Baruch, who is a stock broker and brother of Dr. Baruch, has knocked around on it a great deal and considers it a good country vehicle. Both he and the doctor occupied it on an exhibition circuit of the track, it being covered in about two minutes. The picture shows Dr. Baruch at the wheel. In appearance the vehicle gives the same striking effect with its red colors set off with



Dr. H. B. Baruch Speeding

considerable brasswork that is so characteristic of this make of machine.

The picture showing four 5 horse-power De Dion-Bouton motorettes lined up for a five-mile race was taken as the clouds were thickening, but it was decided to try and finish before the threatened rain came. The machines were started about 300 feet in front of the judge's stand, where the watches would be started, and they came down and passed this point with only half a dozen feet between the leader and trailer. Mr. Seligman's vehicle, managed by his well-known young driver, finished the first mile in 2 minutes 49½ seconds. Mr. Was-

sermann's and Dr. Sternberger were close to him, but by that time the wind was so strong that the loose surface of the track was blown into the atmosphere, making, with the general darkness, an aspect of night that was realistic of a Western tornado. Then the rain came in torrents and in a couple of minutes it was seen that the afternoon festivities must be abandoned.

New Style Brougham

THE Vehicle Equipment Company, of 35 Nassau Street, New York City, have just completed several electric broughams, one of which is well shown in the accompanying illustration. These broughams, in design, are intended to follow strictly horse vehicles in general body lines, and in order to do this no machinery or batteries are carried in the body. They are equipped with the "Pedestal Gear" on the Gibbs system, as are all the vehicles built by the Vehicle Equipment Company.

Vehicle Equipment Company Electric Brougham

Automobile Club Directory

Under this heading we shall keep a record of the motor vehicle clubs both of this and other countries, and we hope to have the co-operation of club officers in making it accurate and complete.

*Corresponding clubs of the Automobile Club of America are designated thus *.*

Automobile Club of America, S. M. Butler, Secretary, 95 Liberty St., New York; representative on International Racing Board, Clarence Gray Dinsmore; Substitute, John H. Flagler.

Automobile Club of New Jersey, Secretary, Dr. H. Power, Montclair, N. J.

Automobile Club of Baltimore, W. W. Donaldson, Secretary, 872 Park Avenue, Baltimore.

Automobile Club of Brooklyn, Secretary, C. Benton Dix, Hotel Clarendon, Brooklyn.

*Automobile Club of Columbus, O., C. M. Chittenden, Secretary, Broad Street.

Chicago Automobile Club, Secretary, H. M. Brinkerhoff, Monadnock Block, Chicago.

Indiana Automobile Club, Indianapolis, Ind. Secretary, August Kabich.

Long Island Automobile Club, Secretary, Charles W. Spurr, Jr., 1190 Fulton Street, Brooklyn.

Automobile Club of New England, Secretary, Geo. E. McQuesten, Brookline, Mass.

*Cleveland Automobile Club, L. H. Rogers, 357 Amesbury Avenue, Secretary, Cleveland, O.

*North Jersey Automobile Club, E. T. Bell. Jr., Secretary, Paterson, N. J.

*Automobile Club of Rochester, Frederick Sager, Secretary, 66 East Avenue, Rochester, N. Y.

Massachusetts Automobile Club, President, J. Ransome Bridge; Treasurer, Conrad J. Rueter; Secretary, L. E. Knott, 16 Ashburton Place, Boston, Mass.

Pennsylvania Automobile Club, Secretary, Henry J. Johnson, 138 No. Broad Street, Philadelphia.

*Philadelphia Automobile Club, Frank C. Lewin, Secretary, 250 No. Broad Street, Philadelphia, Pa.

Automobile Club of Bridgeport, Secretary, Frank W. Bolande. 208 Barnum Avenue, Bridgeport, Conn.

Rhode Island Automobile Club, Secretary, Frederick C. Fletcher, P. O. Box 1314, Providence, R. I.

Princeton University Automobile Club, Princeton, N. J. President, P. Adamson; Secretary, Charles H. Dugro.

San Francisco Automobile Club, B. L. Ryder, Secretary, San Francisco, Cal.

Columbia College Automobile Club, Lewis Iselin, Secretary, Columbia College, New York, N. Y.

*Buffalo Automobile Club, Secretary, Ellicott Evans, The Lenox, Buffalo, N. Y.

Worcester Automobile Club, Worcester, Mass., President, J. W. Bigelow; Vice-President, Edwin Brown; Marshal, W. J. H. Nourse; Treasurer, B. A. Robinson; Secretary, H. E. Shiland.

Automobile Club of Syracuse, Syracuse, N. Y., Secretary Frederick H. Elliott, 515 S. A. & K. Building, Syracuse.

AUSTRIA.

Budapest—Magyar Automobil Club 31 Musem Korül.

Innesbruck—Tiroles Automobil Club, Rudolph-Strasse 3.

Prague—Prager Automobil Club.

BELGIUM.

Antwerp—Automobile Club Anversoir, 34 r. Longue de l'Hopital; President, Baron de Bieberstein.

*Brussels—Automobile Club de Belgique, 14 Pl. Royale ; Moto-Club de Belgique, 152 Boul. du Nord ; Touring Club de Belgique, 11 r. des Vauniers.

Charleroi—Automobile Club de Charleroi, Hotel de Esperance.

Ghent—Automobile Club de Flandres.

Liege—Automobile Club, Liegeois, 2 r. Hamal.

FRANCE.

Amiens—Automobile Club de Picardie, 36 r. de La Hotoie.

Avignon — Automobile Club de Avignon.

Bordeaux—L'Automobile Bordelais.

Dijon—Automobile Club, Bourguignors Cafe Americanie.

Lyon—Bicycle et Automobile Club de Lyon ; Motor Club de Lyon, 3 pl. de la Bouise.

Marseilles—Automobile Club de Marseilles, 61 r. St. Fereol.

Nance—Automobile Club, Lorrain, Thiers pl.

Nice—Automobile Velo, Club de Nice, 16 r. Chauvain.

*Paris—Automobile Club of France, 6 pl. de la Concorde ; Motr-Club de France ; Touring Club de France, 5 r. Coq-Héron.

Pau—Automobile Club, Bearnais Ave. de la Pau, President, M. W. K. Thorn.

Périgueux—Veloce Club, Perigourdin, Hôtel de Commerce.

Toulouse—Automobile Club, Toulousain Café Riche, pl. St. Etienne Société des Chaffeurs du Midi, 25 r. Roquelaine, President, M. Gay.

GERMANY.

Aachen (Aix la Chapelle)—Westdeutscher Automobile Club, Hotel Grand Monarque.

Berlin — Mitteleuropaischer Motor Wagen Verein, I. Universitatstrasse, Herr A. Klose ; Deutscher Automobil Club, Liusenstrasse, 43-44.

*Deutscher Automobil Club, Liusenstrasse, 43-44. President, S. D. Herzog, Victor von Ratilin.

Dresden—Radfahrer-und Automobilisten Vereinigung; Dresdener Touren Club.

Eisenach—Mitteldeutscher Automobil Club ; Motorfahrer Club, Eisenach.

Frankfort am Main — Frankfurter Automobil Club, Restaurant Kaiserhof.

Munich—Bayer. Automobil Club, 33 Findling Strasse.

Stettin—Erster Stettiner Bicycle und Automobil Club.

Strassburg—Strassburger Automobil Club.

Stuttgart—Suddeutscher Automobil Club ; Wurtembergischer Motor Wagen Verein.

GREAT BRITAIN.

Birmingham — Motor and Cycle Trades Club, Corporation street.

Edinburgh — Scottish Automobile Club.

Liverpool—Liverpool Self-propelled Traffic Association, Colquitt street. Secretary, E. Shrapnell Smith.

*London—Automobile Club of Great Britain and Ireland, 4 Whitehall Court, S. W. Hon. Secretary, C. Harrington Moore.

Nottingham Automobile Club, Secretary, A. R. Atkey, Nottingham, England.

HOLLAND.

Nimegue—Nederlandsche Automobile Club.

ITALY.

Milan—Club Automobilisti Italiani 6 via Guilini.

*Turin — Automobile Club d'Italie Via Vittorio Amedeo II, 26.

RUSSIA.

Moscow — Moskauer Automobile Club, Petrowka, Hauschnow.

St. Petersburg — Automobile Club de Russe, President, M. Delorme.

SPAIN.

Madrid—Automobile Club de Madrid.

SWITZERLAND.

*Geneva — Automobile Club de Suisse, 9 boul. de Theatre.

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Reaction Against Heavy Racing Cars

THE reaction against the building of heavy cars is logical. The tires are chiefly what has caused it, for there is no question that rubber will stand with profit to its user only just so much strain and weight. A tire has much to contend with even when little weight is upon it when traveling at the speed which modern automobiling is developing. The friction alone against the hard dirt, gravel or macadam surface is enough to heat the rubber so that even when the temperature is cool the hand cannot be held on it. It can readily be seen that the friction is considerably increased when the tire is revolving against the road and being pressed down on it by a heavy weight such as the body, motor and occupants of an up-to-date racing automobile aggregate.

The Automobile Club of France is entertaining a suggestion that in further events organized under their rules, the maximum weight allowed for cars fully equipped, without passengers, will be 900 kilos.,

equal to about 1,800 pounds. For other reasons than those associated with tires such a ruling is desirable, as any good to be obtained from the continued production of vehicles with increasing horse-power is more than counterbalanced by the prejudice which the continued using of this type of vehicle is likely to create, and which would, no doubt, ultimately culminate in restrictions being placed upon the industry.

No Track at the Automobile Show

DIAGRAMS have been issued by the Automobile Club of America showing the floor and balcony spaces which are for sale for the club's second annual automobile show at Madison Square Garden opening November 2 and closing November 9. The spaces on the floor will be sold for $1.25 per square foot, and all other spaces, which are about 10 x 10, are placed at $100 each. The diagrams allow for no track, the whole floor space being given over to the display of vehicles. On several of the club's governors being questioned concerning abolishing the track, it is learned that on account of the large demand for space it was considered advisable to give the whole floor over to showing the manufacturers' wares. From a financial standpoint this plan may be profitable, for it enables just so many more makers to hire spaces and it gives the club just so much more money from rentals, but whether or not the absence of a track will destroy much of interest in the show is yet to be determined upon. The result of the coming one will be the test.

There will be no seats for spectators except in the upper gallery, the chairs and boxes sloping up from the arena being floored over level for renting purposes. People attending will confine their interest entirely to passing around through aisles looking at vehicles. The average visitor will not probably care to stay over from between one-half to one hour at the show, seeing all he will care to in that time. There being no place to sit down and nothing going on to watch, will tend to cut the time of each individual stay down to small figures. But according to the club committee this will not militate against the success of the show, for as long as people pay the price of admission and attend, it makes little difference how long they stay when once in.

There is no question that many people will attend the coming show, but many more would be present if they thought displays of motion, contests, etc., would be seen. There is also no question that plenty of those who attend this year will leave the building with a feeling of disappointment over the fact that there was "nothing to see" except automobiles. These people will not probably attend the show the following year, women specially being influenced in this way.

Just what effect the absence of contests, etc., will have on the daily press accounts is yet to be seen. Such journals depend for reading matter mostly on what actually happens and they may cut their accounts of the show down to such small proportions that they will hardly be noticed. This will surely affect the attendance considerably, for although enthusiasts may keep track of the show the general public will not unless it is continually reminded that a show is in progress and interesting things are happening at it. Lack of spectacular display will make no difference with the technical press, they writing of the show almost entirely from a mechanical and industrial standpoint. If the annual Horse Show consisted merely of showing equines in their box stalls, it never would have grown to be such a fashionable and profitable event. The spectacular display of plenty of life and movement by horses and vehicles and the furnishing of accessible and conspicuous places to watch them from is what draws the day and night crowds.

Considering the question of showing vehicles in action it may be said that the plan proposed is to have the manufacturers take their guests outside on the city streets. This will undoubtedly work fairly well in the daytime, but few will care to avail themselves of the privilege at night, whether the weather is pleasant or not. A prospective buyer will make an appointment for some afternoon for a trial of a machine whether a show were there or not, but it is probable that very few of the general public at the show will ask for a ride in the open air.

However, the whole question is one in which the club has the say, and if it thinks the industry is helped more by having the show run on the present plan in place of as it was last Fall no one should complain. The prediction is made here that after the coming show there will be strong talk of going back in the future to arrangements where vehicles may be seen under cover in motion, which enables also many to take their first automobile ride under pleasant conditions and in sight of their friends.

New Speed Laws in France

THE French Government has formulated some new rules regarding the running of automobiles in that country. The chief clause is the one relating to the limiting of the maximum speed to 19 miles per hour, or 30 kilometers. Another clause prevents the holding of a road race unless the consent is obtained of the mayors of all the towns traveled through. Also, in the future the horn or bell of an automobile must not be sounded except for the purpose of giving notice of approach in dangerous places and for the purpose of avoiding accidents. It is not to be used any longer for the purpose of clearing the way for an unlimited distance ahead in order to guarantee to automobilists free and exclusive passage.

Regarding the maximum speed allowed in the open country the new regulation says this: "Any automobile capable by reason of its construction of exceeding this speed, and thus being liable to violate the law, shall be provided in front and behind with 'plaques' bearing a registered number, and this number shall be always visible."

As there is hardly an automobile used anywhere, except freight carriers, that cannot go over nineteen miles an hour the new regulations will prove to be far reaching.

Edward A. Bond on Good Roads

STATE ENGINEER EDWARD A. BOND, who was one of the speakers at this year's annual dinner of the Automobile Club of America, is the executive head of the good roads movement which has lately shown such strength at Albany. He is doing a great deal of traveling around the State, inspecting roads now being improved, getting the ideas of people living in the vicinities of the improvements, and laying out plans for further highway developments.

Mr. Bond says: "The good road, the trolley, the pleasure automobile, the road traction engine and the bicycle will destroy the anarchist party, for they will take the workingman out of the city into the country and give him a pleasant home. Those blocks of tenement houses in New York, we shall all hope, will in time be superseded

by the manufactory and other business concerns, and the underground road, the trolleys, automobiles, the good roads and the bicycles will enable the workman to live five miles in the country. We will use the State appropriation this year of $420,000 in a way that is bound to show.

"I have recently talked with Governor Odell concerning the improvement of the roads and other subjects relative to the work of this department. The Road Improvement Company, organized by Edward H. Harriman, which has the contract for improving the roads of Orange County, has already expended $14,000 on road improvement machinery. We are building an improved dirt road for fourteen miles west of Newburg. I told the Governor it was an experiment. I don't know whether such a road will last. The cost of the Orange County roads will not be over $1,500 a mile."

Fast Foreign Automobile Speed Trial

THAT celebrated English autoist S. F. Edge recently made a speed trial in France with his 70 horse-power Napier machine. He was preparing for the Paris-Berlin contest and wished to see just how fast he could make his powerful and ponderous vehicle travel. The trial was held Sunday, June 30, on a fine stretch of road near Chartres. H. J. Swindley acted as timer, first over a measured kilometer and then over a measured five miles. According to the *Autocar* the kilometer with a flying start was accomplished in 32⅘ seconds, at a speed of 111 kilometers or just over 68½ miles per hour. The five miles was accomplished in 4 minutes 44⅘ seconds, or at the rate of nearly 63¼ miles per hour. This beats any record of road speed, and although it should not be taken as official, still it is without doubt true. It certainly is wonderful going and gives a true insight as to just how fast an automobile constructed especially for speed can travel. Mr. Edge's figures cannot be accepted as authentic records on account of the trial not being publicly made.

Notes

IT has been suggested that all automobiles should be tested by a layman or one who is not a mechanic, to bring out defects or inconveniences which the average user will find troublesome and annoying. This of course to be in addition to the engineer's test for efficiency of the motor and parts.

This has many good points and ought to make any machine more popular if the user's ideas of convenience are carefully considered. The main thing to avoid is the "one-man" idea which can be overcome by having the machine handled by several laymen instead of depending on one.

The tire question is still with us and will remain until a tire is produced which will be easy riding whether inflated or devoid of air, which will not puncture easily, chafe and wear itself out, if it does puncture or in fact give any more trouble than the average carriage tire. "Puncture proof" is out of the question for a rubber tire—even a solid one—although in that case it does not alter its riding qualities, only its life. All that can be hoped for is a tire that will run a hundred miles if necessary after puncture, without shaking the teeth out of the occupants of the vehicle or ruining its own constitution.

The Munger, New York and one or two others seem to come pretty close to this, but of course no tire as heavy as these can ride as nicely as a thinner tire depending entirely on the air within. So it seems to be a question of a little less resiliency and comparative freedom from punctures that must be fixed on the road or a light springy tire, and the chance of walking to the nearest station or ruining the tire by running home.

The Dunlop, G. and J. Michelin, or any good double tube tire appeals to one as being easier to repair, but even this takes time, and in the meanwhile your more fortunate friends have left you far in the rear. Then you can run the risk of being arrested for speeding if you try to catch up or of staying behind the rest of the journey. Let us hope the tire men will solve the problems in their end of automobiling and earn the gratitude of every driver of a motor carriage.

The lubrication of automobiles, both the engines and other bearings, is quite a problem to many users. Carriages of all kinds must

be oiled or greased, the method and the frequency depending upon the style of bearing, which may be plain, roller or ball. This remains the same for the automobile, except that the increased weight on the bearings must be considered and possibly a heavier lubricant used. The driving strain on the rear bearings also has its effect, but the maker's suggestions in such cases are always worth heeding until you find a better way. The motor too, no matter what its type, deserves careful attention. Cylinder oil for steam engines is easy to obtain as the temperature is not high, but in the case of gasoline engines this is a harder proposition. The maker's experience here is also a good thing to go by, and the quantity as well as the quality of cylinder lubricant has much to do with the smooth and smokeless running of the motor.

Automobile troubles sink into insignificance when a spell of hot weather strikes us and the horses adorn sunbonnets and wear sponges on their head. Traffic of all kinds is very much delayed if not entirely suspended and horse shower-baths have to be instituted at convenient hydrants. Hospital service seems to demand an ambulance system that will not succumb to any weather, particularly that which makes it all the more necessary.

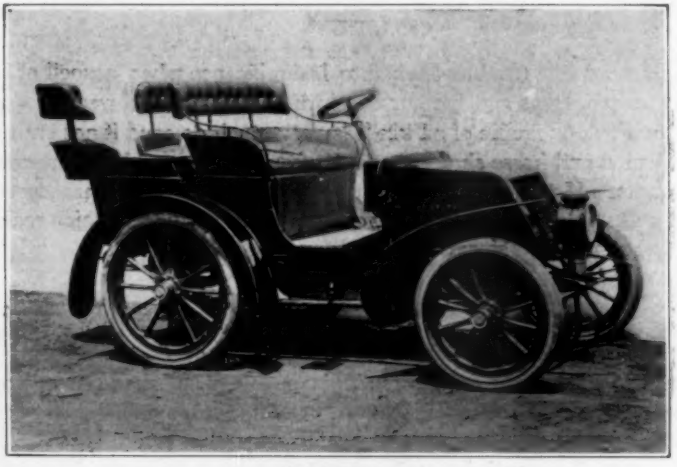
On some carriages which we have seen, the designer seems to have lost sight of the natural tendency of things and made them work backward. One, in particular, had the clutch lever pulled toward the driver to go ahead and pushed forward to throw in the back gear. Perhaps it's because we have been accustomed to locomotives, but it seems to be decidedly backwards.

When it comes to brakes there's another consideration, however. It seems as if it was natural to pull back on meeting an obstruction, yet there's another side to it. When the carriage slows down the tendency of the driver is to slide forward, due to inertia. If it's a sudden stop this tends to counteract the braking if we pull back. For this reason many builders who are using a hand brake have it push forward instead of pull back. Then the sliding forward helps to put it on all the harder. Like most questions there's at least two sides to it.

The Riker Gasoline Car

THE handsome accompanying picture represents the latest and one of the most important additions to the list of American built gasoline automobiles. It is the result of the all around mechanical knowledge of Andrew L. Riker, who heretofore has become so well known in the electric automobile line. Mr. Riker's machine must be personally examined to have its many fine points appreciated, but a few statistics regarding it may serve to enlighten those who must withhold inspection until the machines are in everyday use.

The weight complete is about 1,680 pounds. Power is furnished by a vertical two-cylinder water-cooled engine developing 9 horse-



Riker Gasoline Car With Tonneau Body

power at a speed of 900 revolutions per minute. The cylinders are 4 x 4, with cranks set at 180 degrees. Both cylinders, with the water jackets, and valve chambers at the sides of the cylinders, are cast in one piece. All four valves can be removed by loosening one bolt. All the working parts are enclosed in the cast iron crank box, and are lubricated by the splash method. The lower part of the crank-casing can be removed to get at the enclosed parts without releasing the engine from the frame. A single vaporizer serves both cylinders, and is placed close to the engine where it may be easily reached through a door in the side of the bonnet. It has a needle valve feed, the gasoline being led directly from the tank to the bottom of the vaporizer

where the feed valve is placed. The gasoline is prevented from flowing directly into the vaporizer by a needle valve, which is normally held closed, by a long, helical spring. A little above the needle valve, and on the shaft thereof, is a valve of large diameter, normally resting on a seat around the sides of the vaporizer. When suction takes place in one of the cylinders this valve and the needle valve are lifted and a certain amount of gasoline enters and spreads over the fine brass wire gauze below the gasoline opening, The air is drawn in, at the same time, through openings around the gasoline pipe at the bottom. The air passes up through the wire gauze, gathering the gasoline in its course. To provide against the freezing of the vaporizer in cold weather a pipe is provided whereby warm air may be taken from a point near the cylinder and admitted to the vaporizer through an opening in the side. The amount of warm air admitted is controlled by a valve. An adjustable screw stop, not shown, also regulates the lift of the needle valve. These adjustments once made require little attention.

Near the top of the vaporizer are two pipes leading to the cylinders. An internal annular valve is provided, by which the size of the openings leading to these pipes may be varied, and the motor throttled. The gasoline tank is located under the seat, and has sufficient capacity for 200 miles. The admission valves are automatic and the exhaust valves are actuated by cams on the cam shaft, which is enclosed in the crank shaft casing at the left side of the engine. The cam and cam gears thus run in oil. On this shaft are the gears for driving the rotary water pump, and at the end, outside of the casing, is the ignition apparatus, which is enclosed in a removable case.

The jump spark system of ignition is employed, current being supplied by a battery of five large dry cells, located in a box under the seat. The spark coils, one for each cylinder, are enclosed in a box at the right of the engine. This arrangement brings the parts of the ignition system as near together as possible, rendering the parts easily accessible.

The water tank is secured to the front side of the dash, inside the bonnet, and has a capacity of five gallons. The cooling coil is secured to the frame in front of the motor, and is made up of horizontal flanged brass pipes so arranged as to conform with the shape of the front of the steel bonnet which is cut away in front of the coils. Bolted to the frame, directly back of the motor, is the speed gear device. It is of special design and of the planetary system, giving three speeds

forward and a reverse. The entire gearing runs in an oil tight casing, which is provided with a removable top plate for providing easy access to the mechanism. The bottom of the case may be removed for the same purpose. The ratios of the shaft speeds in the three forward gears are: Low gear, 1 to 4; intermediate, 1 to 1¾; high, 1 to 1.

The shaft from the gear box extends back to a countershaft running across the body and carried by bearings bolted to the under side of the frame on each side. A bevel gear on the rear end of the gear shaft drives another bevel gear on the countershaft. The ends of this countershaft carry sprockets which drive other sprockets on the rear wheels by means of heavy roller chains. The differential is provided with a brake drum upon which acts a band brake, operated by a hand lever, located outside the body, and handy to the operator. This lever works on a notched quadrant by means of which it can be set at any point. Brake drums are also secured to the hubs of the rear wheels, the band brake which acts on them being operated by a foot lever at the left of the steering column.

The carriage is operated from the left side. The steering is by wheel, the column of which is inclined at an easy angle for the operator to control it. The throttle on the vaporizer and the ignition is controlled by two small levers, conveniently located on the steering column. The speed changes are operated by the means of four foot levers conveniently placed in the foot board.

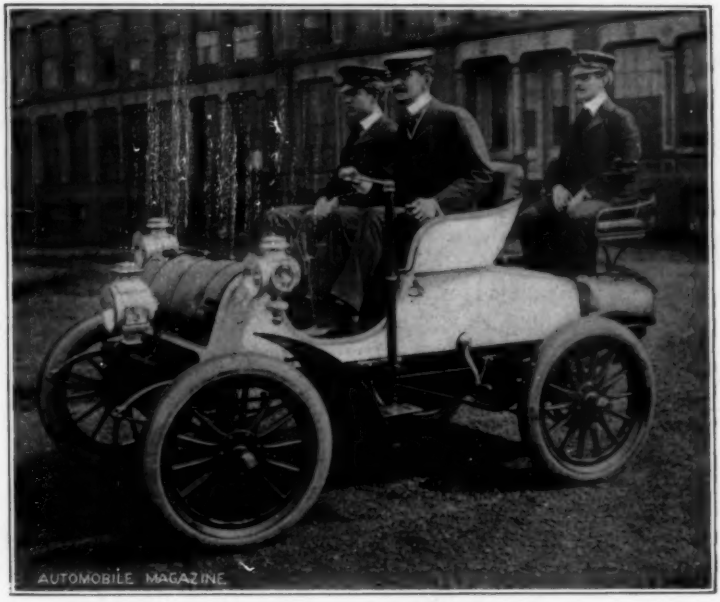
It is understood that a number of these cars will take part in the coming 500-mile endurance contest, word from the Elizabethport shops being that most of those in construction for customers being originally ordered for taking part in that trial. The vehicle is a four-passenger one, but the rear seats may be removed leaving a platform for baggage, making a practical touring car for two people.

Locosurreys as Ambulances

DURING the recent spell of hot weather two Locosurreys were pressed into ambulance service. J. A. Kingman, of the Locomobile Company, relates incidents connected with the picking up and conveying of thirty-three prostrated people in three hours by his firm's two carriages. The police department praises the work of the horseless vehicles on that day, especially commending the quick way in which they were able to go from place to place. Nothing like such a record made by these two surreys has ever been recorded for horse-drawn ambulances.

Pleasure Tour on a Gasmobile

A LONG tour in a Gasmobile was recently made by Samuel L. Clayton. The vehicle was a Stanhope with rumble and is shown in the accompanying picture. His mother accompanied him and A. B. Cumner occupied the rumble. It was mostly a pleasure trip and about 1,300 miles were covered during the month. The party started from Philadelphia and went through Trenton, Newark, New York, Hartford, Springfield, Boston, and ended at far



Mr. S. L. Clayton in His Gasmobile

away Portland, Maine. Return was then made by way of Providence, and New London to New York. Then the trip continued up the Hudson River through Yonkers, Poughkeepsie, Hudson, Albany to Troy, then to Saratoga Springs and back to Troy where a boat was taken for New York. In speaking of the trip Mr. Clayton said: "We had no accidents that could be called such, and we look upon the trip as a great mechanical success in that our machine was able to stand such a strain without getting out of order. Bad roads hampered

us a good deal ; at times we were up to the hubs in sand. But the State roads of Massachusetts made up for what rough ways we had elsewhere. Those roads are ideal, and the only cause for regret is that there are not more of them. Such little accidents as punctured tires, etc., will happen, and we expect them, but we were in no hurry, and generally managed to find a pleasant method of passing the time while repairs were being made. Thus far we have never been delayed more than a few moments at a time."

Mr. Clayton started for Buffalo by way of the Delaware Water Gap, Elmira, etc.

Personal Mention

THE averaging of 53¼ miles or about 85 kilometers an hour by Fournier in this year's Paris-Bordeaux race brings out prominently the ludicrous side of a little story told of the president of the Automobile Club of France, related in the *Autocar* as follows : "The Baron de Zuylen, at the dinner which he gave to the winners of the Paris-Bordeaux race, told an amusing story of what happened at the banquet given to Levassor on the occasion of his winning the first race to Bordeaux and back in 1895. One of the speakers proposed the health of the winner, but added that he also drank to the health of him who would in the future average 80 kilometers instead of 22 kilometers. Levassor, on hearing this, leaned over to the Baron and said, "What a pity it is that on these occasions someone always makes a fool of himself."

Mr. Amzi L. Barber, President of the Locomobile Company of America, arrived in London Wednesday, June 26. He took with him a new long-distance touring steam-car, of which some particulars may be given later.

Charles G. Wridgway, member of the Automobile Club of America, who has done much successful touring in DeDion-Bouton Motorettes, and who has represented that company in several important business matters is now the assistant general director of the firm, he coming right next to Cornelius J. Field, vice-president and general manager. Those who are acquainted with Mr. Wridgway while missing him more or less from active participation in automobile sport will congratulate him on his advancement.

Motor Wagons for Military Purposes

WE have occasionally referred in these columns to the fact that France, England and other European countries were doing much to encourage the use of motor vehicles for military purposes. There cannot be any reasonable doubt that self-propelled wagons will gradually come to be recognized as valuable adjuncts in time of war. Of course, their performances at such times will depend somewhat upon the territory in which they are to be used.

As illustrating the attention this matter is receiving at the hands of the British military authorities the United States Consular Department has received from the British Embassy in Washington notice of a competition for a self-propelled wagon for military purposes. Three prizes are offered for the three self-propelled lorries best suited to military requirements: A first prize of £500 ($2,433.25), a second prize of £250 ($1,216.62), and a third prize of £100 ($486.65). Firms or individuals intending to enter for this competition must send in their names to the secretary, mechanical transport committee, War Office, Horse Guards, Whitehall, London, England, on or before September 1, 1901. The conditions are summarized as follows:

CONDITIONS.

No vehicle will be admitted to the trials unless a fully dimensioned set of drawings and a specification, giving complete details of the lorry and trailer exactly as submitted for trial, together with a statement of the purchase price, have been lodged with the Secretary, Mechanical Transport Committee, before December 4, 1901. The trials, carried out by the War Office committee on mechanical transport, will commence in England on Wednesday, December 4, 1901, and will extend over a considerable period. The exact nature of the trials will be decided by the above committee, which reserve to themselves full powers to carry out any additional tests, and also the power of rejecting any vehicle which does not comply with the requirements published herewith, or of suspending at any stage, the trials of any vehicle which in their opinion has proved itself unsuitable. A firm or individual may enter more than one lorry, but the conditions must be complied with for each separate lorry entered. All designs and specifications will be considered confidential. Those of the vehicles that may be purchased

will be retained for the purposes of the Government, but without prejudice to patent rights. His Majesty's Government will have the right of purchasing, after the trials, any or all of the competing vehicles at the price stated by the competitor. The designs and specifications of vehicles not purchased will be returned to the competitors after the trials.

STATEMENT OF REQUIREMENTS OF SELF-PROPELLED LORRY FOR MILITARY PURPOSES

The lorry to be capable of being used on rough roads, and to a limited extent across country. To be able to go wherever a country cart can go, and to be capable of being driven through an opening 7 feet 6 inches wide. Net load to be 5 tons, of which 3 tons must be carried on the lorry and 2 tons on a trailer; these weights are exclusive of fuel and water, all of which must be carried on the lorry. The total platform area not to be less than 15 square feet for each ton of net load; both platforms to be fitted with removable sides and ends about 2 feet high. The top of the lorry platform when ready for loading not to be more than 4 feet 3 inches from the ground level; that of the trailer not more than 4 feet. The lorry and trailer carrying their full net load of 3 and 2 tons, to be capable (1) of a speed of 8 miles per hour on fairly level roads in fair condition; (2) of a mean speed of at least 5 miles per hour on average roads, up and down hill; (3) of taking its full load without assistance on an average road, up a slope of 1 in 8. The weights should be so distributed that the lorry should always be under control on slopes up to 1 in 8, whether loaded or empty. There must be proper arrangements to avoid damage from mud or dust. Any casings used must be easily removable. The lower portions of the machinery must be strongly protected and not less than 18 inches from the ground, except the driving gear, which should be kept as high as possible. The lorry to be capable of efficient control, of steering at all speeds, of reversing at low speeds, and of being worked and controlled by one man. It must also be able to run for 48 hours without overhauling or cleaning. The driving wheels not to be less than 4 feet 6 inches in diameter, nor less than 9 inches wide across the tires, which may be fitted with plain diagonal road strips. No restriction is placed on nature of fuel or class of engine—steam, internal combustion or otherwise—except that oils under 75° F. flash point (Abels' close test) must not be employed. In the case of steam engines, an alternative arrangement for burning solid or fuel oil is desirable, and the engine must comply with the requirements of the Man-

chester Steam Users' Association. No limit is placed on tare weight. In judging the merits of competing vehicles, the following points will be considered ; (*a*) Prime cost, having due regard to efficiency ; (*b*) distance that can be traveled by the vehicles fully loaded with 5 tons, carrying fuel and water on the lorry ; (*c*) economy in weight ; (*d*) durability ; (*e*) accessibility of all parts ; (*f*) simplicity of design ; (*g*) ease of manipulation ; (*h*) absence of noise, vibration and smoke.

For further information, application should be made to the military attaché, British embassy, Washington.

Paris-Berlin Race

THE great long-distance automobile race from Paris to Berlin, which was so encouraged by the Emperor of Germany, resulted in another signal victory by that now world-famed automobilist, Henri Fournier. At first it was proposed to interest the whole of Europe in a long-distance speed test by organizing a race from Paris to St. Petersburg, but the delegates sent by the Automobile Club of France to examine the routes found it to be next to impossible to race in Russia, so the objective point was made Berlin. German automobile clubs were attracted and they in turn spread the interest so much that Emperor William gave the proposition its final impetus by offering a valuable prize.

A race of this description over 744 miles of road going through something like forty-five towns of more or less importance naturally necessitated a perfect organization, and the most thorough precautions had to be taken for the security of the public, and it is obvious that, while the local authorities of the different countries may mobilize a whole army of police for once, they can hardly be expected to do it a second time, and, if for no other reason, a repetition of the Paris-Berlin race must not be looked for. It was an interesting experiment, which has, happily, been carried out successfully, and, having served its purpose, the matter ends. Manufacturers made prodigious efforts to carry off the prizes. All along the route they posted mechanics, most of them riding bicycles, so as to be ready for any emergency. Some had fifty and others seventy men on the road, while the gasoline firms sent forward thousands of gallons of spirit. At all the towns spare tires were in readiness, with men to assist in putting them on, and the

tire firms vied with each other in the magnitude of their preparations. The money spent upon the race was tremendous.

The start took place at Champigny, a little way to the east of Paris, on Thursday morning, June 27. Despite the inconvenience of getting to Champigny, there was a large crowd of people by the time the vehicles had ranged themselves for the start, and when at half-past three the dawn had broken into daylight the first man, Giraud, was sent off, and the others followed at intervals of two minutes. Following are the first twelve sent away : Giraud (light Panhard car), 3 h. 30 m.; Gilles Hourgières (Mors), 3 h. 32 m.; Fournier (Mors), 3 h. 34 m.; Charron (Panhard), 3 h. 36 m.; Girardot (Panhard), 3 h. 38 m.; Réné de Knyff (Panhard) 3 h. 40 m.; Paul Chauchard (Panhard), 3 h. 42 m.; Pinson (Panhard), 3 h. 44 m.; Loysel (Panhard), 3 h. 46 m.; Maurice Farman (Panhard), 3 h. 48 m.; Jarrott (Panhard), 3 h. 50 m.; Heath (Panhard), 3 h. 52 m.; Georges Leys (Panhard), 3 h. 54 m.

The total number of starters was 110 out of 171 entries, and they comprised 40 large cars, 48 light carriages, 12 voiturettes, and 10 motor cycles. The attendance and enthusiasm along the route went far beyond all expectations. Several towns had offered special prizes for those who arrived first at their limits. Triumphal arches were erected under which the contestants went at express railroad speed amid flying flags and bands playing. The patrolling by police and soldiers was all that could be desired, thousands being employed for this purpose. In fact, about the only detriment spoken of in making fast time by those who were unfortunate enough not to be leaders was the dust. This is getting to be considered the worst enemy of automobile racing. In commenting upon this the *Autocar* of England says : " After the race we asked Henry Farman what was his experience of passing through the dust when trying to get in front of another car, and his description is graphic in the extreme. When overhauling a car you suddenly find yourself in a dense cloud, which obscures the vision to such an extent that absolutely nothing is to be seen. You only know that you are getting near the car by the whipping and tingling of the face with dust, and when you get hit with gravel and stones you know that you are close up behind. You hastily wipe your glasses to clear them of the accumulated dust, and then possibly you may be able to distinguish a dim shadow. It is of no use sounding the hooter or crying out ; nothing can be heard. You can only hope that the car is well on the right, and if you have luck and suffi-

cient speed you squeeze through, and, getting once more into the clear air, give your competitor the benefit of the dust."

The following is a list of the arrivals at Aix-la-Chapelle, a distance of 283 miles from Paris: Fournier, at 12 h. 2 m.; René de Knyff, 12 h. 14 m.; Girardot, 12 h. 40 m.; Voigt, 12 h. 43 m.; Maurice Farman, 12 h. 49 m.; Charron, 12 h. 54 m.; Count Boson de Périgord, 1 h. 8 m. 57 s.; Pinson, 1 h. 17 m.; Jarrott, 1 h. 18 m.; Baron de Crawhez, 1 h. 27 m.; Axt, 1 h. 34 m.; Hon. C. S. Rolls, 1 h. 38 m.; Gilles Hourgières, 1 h. 39 m.; Giraud, 1 h. 45 m.; Lemaître, 1 h. 50 m.; Degrais, 2 h. 6 m.; and Clément, 2 h. 7 m. The others arrived in the following order: Heath, Cormier, P. Chauchard, Henry Farman, Mercier, Berteaux, Louis, Renault, Werner, Edmond, Mercy, Osmont, Labbey, Antony, Brasier, M. Renault, Foxhall Keene, Grus, Bardeau, Ribey, Rolls, G. Desmarets, Gabriel, Van der Heyden, Baron de Turckheim, Serpollet, Marcellin, Oury, Rolland, Lazon, Merville, Brillié, Lamoy, Haban, Rigolly, Dernier, J. Gondoin, Kraentler, Madame du Gast, Filtz, Peschard, Paris, and Nicolay. Altogether sixty vehicles terminated before the closing of the control out of a total of 110 starters.

The list of starters from Aix-la-Chapelle on Friday was supplemented by several competitors who had reached the town late the previous night, or even on the same morning, and altogether seventy-seven were sent off in the following order at intervals of two minutes, the time of departure of the first man being 5 h. 6 m.: Fournier, Réné de Knyff, Girardot, Voigt, Maurice Farman, Charron, Comte Boson de Périgord, Pinson, Jarrott, Baron de Crawhez, André Axt, Hon. C. S. Rolls, Gilles Hourgières, Giraud, A. Lemaître, Degrais, Clément, Heath, Cormier, Paul Chauchard, Henry Farman, Mercier, Georges Berteaux, Louis Renault, Werner, Mercy, Edmond, Antony, Marcel, Renault, Brasier, Osmont, Labbé, Bardin, Sincholle, Foxhall Keene, Grus, Bardeau, Ribeyrolles, Godard-Desmarets, Teste, Gabriel, Van der Heyden, Léon Serpollet, Baron Turckheim, Marcellin, Oury, A. Roland, Brault, E. Merville, Brillié, Lamy, Haban, Rigolly, Léon Dernier, J. Gondoin, Kraentler, Madam du Gast, Morin, Filtz, E. Lemaître, Peschard, Paris, Nicolay, Albert Collins, J. de Crawhez, Marbais, Barbereau, H. Jeannin, Delisle, Deschamps, Turgan, Page, Barbereau, Carl Bereis, P. Faure, Martha and Rivierre.

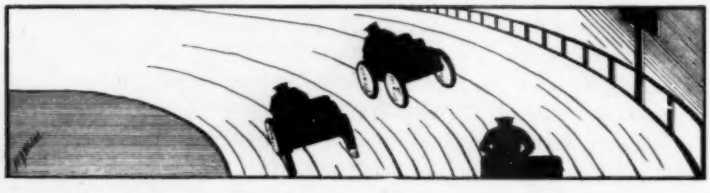
Fournier arrived at Berlin amid a wonderful demonstation at 11.38 a. m., having made the total distance in 16 hours 6 minutes, allowing for a difference in time between the start and finish. Girardot

was second at 12.08 p. m., Brassier was third at 12.26 p. m., De Knyff was fourth at 12.23 p. m., Charron was fifth at 12.35 p. m. and Farman was sixth five minutes later. The average speed for the 744 miles was over thirty-nine miles per hour. The result of the race proved that French automobiles with their drivers are the best combination for speed yet seen.

Tecumseh Swift, a writer well known for his timely and always sensible articles in the *American Machinist*, ends a recent letter as follows :

" Whatever at the present moment may be the apparent status and promise of the automobile or the autocar, or whatever we may choose to call it, we cannot find it difficult to believe that it is the coming vehicle for surface transportation, both for individual use and for the biggest of the city transportation or traction companies. It behooves the big corporations to be looking out for themselves by the fullest investigation of and experimenting with the most promising of the independent motor vehicles, for that is what they are very likely to have to come to. It may be more than a mere coincidence that with the funeral of the cable we have the announcement of important and valuable improvements in the storage battery. That may be the herald of another great advance in the direction here indicated, and New York city, which to its great ultimate advantage, would not admit the overhead wire, may one day insist upon the removal of every car track from its streets and avenues."

We would hardly care to predict this on account of possible prejudice. Coming from Mr. Swift it has weight as the conviction of one not directly interested in the motor vehicle industry.



Two English Wagons

IN our last number we printed the results of the recent trials of heavy vehicles held in Liverpool, England. Two wagons which made excellent showing on that occasion were those entered by Thornycroft Steam Wagon Company and T. Coulthard & Company. The builders of both these wagons have been engaged for several years

Thornycroft 7-Ton Lorry

past in the manufacture of wagons of this type, having spent considerable money in experimenting.

It will be remembered that last year a Thornycroft wagon formed part of the exhibition held in Grand Central Palace, this city. The Thornycroft wagon shown, so far as the mechanical parts are concerned, is somewhat of an improvement over former wagons turned out

by that concern, and represents the very latest ideas in heavy wagon construction. The driving axle is made from heavy forged steel shafting ; the wheels are of the regular military type. The platform is adjustable and is carried on heavy channel irons running from one end to another. In steering the divided axle method is adopted, the leading wheels being moved by a large hand wheel placed in front of driver through the medium of a worm and sector. The boiler is located in the front. The engine is suspended from the channel steel underframe from three points, and is enclosed entirely in a dust proof case. Boiler is of water tube construction, fired from the top,

The Coulthard Steam Lorry

the fuel used being coal, which is carried in the space surrounding the boiler at front of wagon. This wagon was awarded the gold medal in heaviest class at the trials referred to and is believed to be the largest steam lorry in the world, about half the carrying capacity of a flat car.

The Coulthard truck shown is another excellent example of heavy motor vehicle construction. The wagon has a capacity of from 4 to 5 tons and represents the latest practice of this well-known company. The leading dimensions of this vehicle are as follows : length over all 18 feet 3 inches ; width, 6 feet 6 inches ; height to top of smokestack, 8 feet 10 inches ; platform, 12 feet 6 inches by 6 feet ; giving an area of 80 square feet ; full capacity, 4 cwt., equal to a run of 30 miles.

This vehicle, in a many respects, resembles most of the English built heavy wagons. The boiler is carried in front and is of the vertical fire tube type, and mounted with the most approved fittings. It carries a pressure of 200 pounds. The boiler feed pump is directly connected to the engine. Engine is of the compound type and fitted with link reversing gear. The drive is by what are known as Hans Renold silent chains which give great efficiency. The wheels are of gun carriage pattern, fitted with steel hubs, oak spokes and ash felloes, the width of tires being 6 inches and 5 inches respectively. Band brakes are fitted to the road driving wheels and are capable of holding the vehicle on any grade. The driver occupies a position in the extreme front, ahead of the boiler.

Both wagons are strongly built and are the result of long periods of patient experimenting on the part of the manufacturers.

Changes in A. C. of A. Constitution

A SPECIAL meeting of the Automobile Club of America was held Wednesday evening, July 17, for the specific purpose of amending one clause in the constitution and seven clauses in the by-laws. Twenty-six members were present, thus ensuring a quorum, which is twenty-five. The clause of the constitution relating to the Secretary being a member ex-officio of the Board of Governors was changed, so that the Secretary no longer has that privilege, his place being filled by the Treasurer.

The by-laws were amended as follows : The annual meeting of the club will be held on the third Monday of November in place of the second Monday in October. The Secretary shall be employed by the Governors and be paid a salary for his services ; heretofore the Secretary's office was an honorary position, the routine work being done by assistants.

The clauses relating to the proposed change of making the President of the club the Chairman of the Board of Governors were lost on account of the feeling that a change at this time when the club has so many matters on hand would be inadvisable. There was a unanimous sentiment expressed that this change should be made at the annual meeting, and the proposition will undoubtedly be brought up again at that time when there is no question that it will be carried. Albert C. Bostwick, the club's Vice-President, will thus continue to be Chairman of the Board of Governors until the end of his term. As

this subject provoked considerable discussion it may be well to explain why the club's Vice-President is chairman of its directors.

Perusal of the article in this issue entitled, "What the Automobile Club of America has done in two years," will reveal the fact that the club during the first year of its organization had General Avery D. Andrews for President. He took the position with the understanding that he should not be called upon to devote much time to the organization, he being particularly busy. George F. Chamberlin was the Vice-President and one of the club's organizers and was very active as he has been since in the workings of the club. It was most natural but also sensible that power to call board meetings should have been given to him in place of to one who distinctly had it understood that he did not wish to attend to such things. Now, since the club has grown beyond the stage of requiring merely a figurehead for President it is only common sense that the President perform with his other duties the important one of calling and presiding at Board of Governor meetings.

After the above meeting was adjourned discussion took place concerning a basis for some sort of alliance with other American automobile clubs. It ended in Mr. Bostwick being empowered to complete a committee of seven, three of which shall be members of the law committee, two the President and Vice-President, leaving two for him to select. This committee will make a report either at the next annual meeting or to the Governors before that time, as they see fit.

Tractive Horse-Power of Automobiles

FREQUENTLY the question is asked how much power is necessary to propel an automobile of a given weight through wide ranges of speed and under varying road conditions, and unquestionably a table which would give calculations and comparisons of the horse-power required would prove of great value.

In a recent issue of *Electrical World and Engineer*, Mr. W. F. D. Crane has an article in which is given some very valuable information on this subject, and below is reprinted a part thereof.

The horse-power per ton weight of the vehicle given in the table are derived from the general formula for the horse-power of traction:

$$HP = \frac{W \times S \times K}{33000} \pm \frac{W \times 2000 \times \sin a}{33000}$$

in which W = total weight of vehicle and its load in tons of 2000 lbs.

S = speed in feet per minute.

a = the angle of the grade.

K = the coefficient of traction or the resistances to the motion of the vehicle in pounds per ton.

In traction calculations, grades are most conveniently stated in per cent. or the decimal relation between the measured length of the grade and its vertical height above a horizontal base line drawn from its foot or base. Thus, if a hill be 100 feet long and the elevation at the end of that distance be 10 feet the grade will be 10 per cent.

The coefficient of traction K, or the resistance to the motion of a vehicle, is usually stated as so many pounds per ton weight of the vehicle. It is a variable quantity depending upon the character of the tires, the nature of the road surface, the sizes of the wheels, the speed and weight of the vehicle and includes the friction losses in hub journals; and in the motor-driven vehicle, includes also the friction losses in motor and machinery, when no allowances are made therefor. Other things remaining equal, it should vary inversely as the diameters of the wheels, and on hard roads with iron tires at slow speeds, has been found to increase with the speed, but not in proportion to the velocity. It has also been found that the width of tire has no apparent effect upon the tractive force on hard roads. A knowledge of its value under given conditions is one of the first essentials for comparing the merits of different tires for traction purposes, aside from their resilient and wearing qualities, and for pre-determining the capacity of a vehicle motor when working under known or assumed conditions of speed and weight of vehicle; and, vice versa, for ascertaining the performance of a self-propelled vehicle equipped with a motor or engine of definite horse-power.

From published figures it is learned that the draw-bar pull or tractive force varies from between 8 and 11½ lbs. on railroad tracks to 448 lbs. per ton for loose sand with metal wagon tires at a speed of 3 miles per hour. Other figures obtained with the road conditions existing abroad for iron tires at 3 miles per hour, quoted for comparison are:

	Pounds.	Average, about.
Loose gravel road, from . . .	125 to 320	150
Ordinary dirt road, from . . .	89 " 224	150
Cobblestones, from	75 " 140	100
Macadamized surface, from . .	32 " 112	42
Belgian block, from	26 " 56	38
Asphalt, from	17 " ...	...

More recent figures obtained by the Office of Road Inquiry, probably more nearly corresponding to similar conditions in the United States, are, in pounds per ton :

	Pounds.
Loose sand (experimental)	320
Best of clay roads	98
Cobblestone	54
Best gravel (park road)	51
Poor block pavement	42
Best Macadam	38
Poor asphalt	26

In tables I and II are published for the first time some values of K obtained from tests of electric automobiles. Two values for K were

TABLE I. TRACTION TESTS OF TRACTION VEHICLES.

K in Lbs. per Ton.		Vehicle.		Sizes and Kinds of Rubber Tires.	Sizes of Wheels.		City Pavements in Good Condition.
Gross Value.	Values for Tires.	Weight in Lbs.	Speed, Miles per H.		Front.	Rear.	
66	49	1790	14.00	3 in. pneumatic	28	28	Macadam
66	52	1775	13.81	3 " "	28	28	"
55	39	2730	12.45	3 " "	32	36	"
68	52	3140	11.67	3 " "	36	36	"
64	47	1870	15.30	2½ " "	28	32	Asphalt
64	46	5380	9.00	4 " "	36	36	"
54	40	4400	11.20	2½ " solid	36	36	"
48	35	5425	11.15	2½ " "	36	42	"
59	43	7240	7.30	3 " "	38	42	"
58	42	7240	10.00	3 " "	38	42	"
48	36	8480	8.20	4 " "	38	44	"
53	38	4150	11.90	2½ " "	36	42	Macadam

sought in the calculations. First, the gross value of all the resistances to traction, including the inefficiency of the motors, the friction losses in driving mechanism and hub journals, the rolling friction of the tires, electric losses in the wiring of the vehicles, etc., and, second, the net value of K or the coefficient of traction of the tire *per se* for comparisons with other tires or with the same time on other pavements. It is assumed that the pneumatic tires in the tests were in excellent condition and fully inflated under pressures of about 80 pounds for the 2½-inch tires, 100 pounds for the 3-inch and about 120 pounds for the 4 and 5-inch tires.

Compared with the usual dynamometric methods the electric vehicle, through the use of the voltmeter and ammeter, affords one of the simplest and most sensitive means for experimenting with traction

resistances, but a knowledge of the efficiencies of the motors and gearing at the time is essential for a correct interpretation of the results. It is believed that the figures given in the tables are sufficiently exact to be representative for rubber-tired electric and other vehicles with the tires and city pavements in good condition.

In the vehicles tested the efficiencies of the motors, as determined from their efficiency curves, ranged from 79 to 85 per cent. with a general average of about 81 per cent. The friction losses in the gearing were assumed to amount to 8 or 10 per cent., amounts obtained from certain tests of the arrangements of two gears and two pinions common to all the vehicles. An allowance of 2 per cent. was made in certain cases to cover the friction losses in hub journals, with plain

TABLE II.

K. in Lbs. per Ton.		Vehicle.		Sizes and Kinds of Rubber Tires.	Sizes of Wheels.		City Pavements in Good Condition.
Gross Values.	Values for Tires.	Weight in Lbs.	Speed, Miles per H.		Front.	Rear.	
71	51	4300	10.50	5 in. pneumatic	36	36	Asphalt
52	37.5	5390	12.60	3 in. solid in front, 4 in. pneumatic in rear	36	36	"
55	39.5	5390	11.90				
59	42.5	4150	11.15				
48.5	36	5780	9.75	3 inch sectional	36	36	"
38.5	28.5	7900	9.05				

sleeve bearings, losses in the electric wiring, etc. The efficiency of the combination of a motor at 82 per cent., gearing at 90 per cent., and the other conditions at 98 per cent. would, therefore be about 72 per cent. If the gross K, as computed from the results of a test, amounted to 55, the value of net K, or the tire coefficient, would be $55 \times .72 = 39.6$ pounds per ton. The values of the tire coefficients, as given in the tables, were computed by this method, no allowance having been made for the wind resistance as no records of the force and direction of the wind, if any, were taken at the time of the tests.

The friction losses in the power-transmission gearing in gasoline and steam vehicles may be variously estimated at from 10 to 30 per cent. or more of the power delivered by the motor or engine, depending upon the nature and condition of the mechanism.

In Table I. the average of the results obtained for the six vehicles equipped with pneumatic tires on both macadam and asphalt pave-

ments (the respective figures for which show but slight differences) is a gross value for K' (for electric vehicles) of 65, and an average tire coefficient of 47 pounds per ton. Similarly, for the six vehicles with solid tires, the corresponding averages are 53 and 40 pounds per ton, respectively. In Table II are given some results of tests of vehicles with miscellaneous rubber tires.

It is instructive to compare the tabulated figures for the rubber tire coefficients with those quoted for the iron-tired slow-speed wagons, in view of the fact that iron or steel tires have been contemplated by automobile manufacturers of heavy slow-speed trucks as substitutes for the costly and short-lived rubber tires. It is a noteworthy observation that almost without exception the solid rubber tires which show the lowest traction coefficients (below 40) in the table have suffered the greatest damage to themselves in service and possessed the shortest lives. The results of the tests indicate that from 20 to 25 per cent. more power is expended by pneumatic-tired vehicles than those equipped with solid rubber tires on good macadam and asphalt pavements, but it does not follow, from the viewpoint of ultimate economy, that the solid tire will always possess such an apparent advantage over the pneumatic tire.

If we assume that the general efficiency of the gearing in a gasoline or steam vehicle is 75 per cent., and that the tire coefficient is 45 pounds per ton, the gross value of K' will be 60 pounds per ton with a rating of the motor in brake horse-power. This is probably a safe figure for city pavements of asphalt, macadam and Belgian block. On country roads this value of K' (60 pounds) can be readily increased two and more times, as is shown by the comparisons offered by the figures quoted for clay, sand and dirt roads.

As it is the desire in the present article to generalize and to produce a table of the horse-power of traction for convenient approximations and comparisons, the value of K' in Table III has been taken at 60 pounds per ton as a figure at the present time most likely to approximate its average value for the largest number of vehicles operating under the various conditions of tires, speeds and city pavements.

By substituting in the general formula quoted for the horse-power of traction the speed in miles per hour, instead of in feet per minute, and the grade in per cent. for *sin a*, the formula may be simplified to the following expression :

$$H\text{-}P = \frac{WSK}{375} \pm \frac{WSG \times 20}{375},$$

in which W = total weight of the vehicle in tons of 2,000 pounds.

S = speed in miles per hour.
K = total resistances to motion of vehicle in pounds per ton.
G = per cent. of the grade in numerals.

In the table the tractive horse-powers per ton have been calculated for both levels and grades with K at 60 pounds per ton. The results are tabulated in the two parts into which the table naturally divides itself: The horse-power to propel one ton on the level at the speeds given being found in the column headed "H.-P. per ton on level $K=60$"; and the corresponding *additional* and invariable horse-power per ton on grades, irrespective of whatever power may have been required to propel the vehicle over the surface of the ground, being found (in the lighter figures) in their respective columns headed by the per cents. of the grades. The lines of darker figures are the *total* horse-power per ton required to propel the vehicle over the grades with $K=60$, and were obtained in each case by adding the horse-power on the level to the additional horse-power on the grades for the corresponding speeds.

To illustrate: What horse-power will be required to propel a vehicle weighing 2 tons on a 6 per cent. grade at 5 miles per hour? The tabulated horse-power for 1 ton on the level, in the column headed $K=60$, at 5 miles per hour is .80, which, multiplied by 2, equals 1.6 horse-power. The *additional* horse-power per ton on a grade of 6 per cent. at 5 miles per hour is 1.60, which multiplied by 2 equals 3.2 horse-power. This added to 1.6 horse-power, the horse-power on the level, gives a total of 4.8 horse-power, or the same result will be obtained directly by multiplying by 2 the tabulated *total* horse-power for 1 ton, viz., 2.40, or a total of 4.8 horse-power. If this be an electric vehicle the power demanded of the battery will be $4.8\times746=3580$ watts, which at 81 volts will mean a discharge rate of over 44 amperes. If the grade is ascended at 8 miles per hour what current will be required? Answer: $3.41\times2=6.82\text{hp}\times746=5087$ watts at 80 volts $=64$ amperes.

What is the steepest grade that a vehicle weighing one ton and equipped with a motor rated at 6 horse-power can ascend at a speed of 10 miles per hour? By inspecting the table for the total horse-power on grades at 10 miles per hour we find that 5.86 horse-power is the nearest approximation to 6 horse-power, and that this corresponds to a grade of 8 per cent.

If the limit of a vehicle's speed on the level is 18 miles per hour, at what speed will it ascend a 6 per cent. grade, other things being equal? Answer, 6 miles per hour.

TABLE III.—THE TRACTIVE HORSE-POWER OF VEHICLES.

Computed by W. F. D. CRANE, M. E.

General formula: $H\text{-}P = \frac{W n}{375}(K \pm 20\,G)$ G = per cent. of grade.

W = weight in tons of 2000 lbs. K = resistance to traction in pounds per ton. n = speed in miles per hour.

Miles per hour	Horse-Power per ton on level		HORSE-POWER PER TON ON GRADES. The LIGHT figures are the ADDITIONAL and invariable H-P per ton on grades. The HEAVY figures are the TOTAL H-P per ton on grades with K equals 60.										
	$K=10$	$K=60$	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
1	.026	.16	.053	.106	.16	.213	.266	.32	.373	.426	.48	.533	.586	.64
			.213	.266	.32	.373	.426	.480	.533	.586	.64	.693	.746	.80
2	.053	.32	.106	.213	.32	.426	.533	.64	.746	.853	.96	1.06	1.173	1.28
			.426	.533	64	.746	.853	.96	1.06	1 17	1.28	1.38	1 49	1.60
3	.080	.48	.160	.32	.48	.640	.800	.96	1.12	1 28	1.44	1.60	1.76	1.92
			.640	.80	.96	1.12	1.28	1 44	1.60	1.76	1 92	2.08	2 24	2.40
4	.106	.64	.213	.426	64	.853	1.06	1.28	1.49	1 70	1.92	2.13	2 34	2.56
			.853	1.06	1.28	1.49	1.70	1 92	2 13	2.34	2.56	2.77	2.98	3.20
5	.133	.80	.266	.533	80	1.06	1.33	1.60	1 86	2 13	2.40	2 66	2.93	3.20
			1.06	1 33	1.60	1.86	2.13	2.40	2.66	2.93	3.20	3.46	3.73	4.00
6	.160	.96	.32	.64	.96	1.28	1.60	1.92	2 24	2.56	2 88	3.20	3.52	3.84
			1.28	1 60	1.92	2.24	2.56	2.88	3.20	3.52	3.84	4 16	4.48	4.80
7	.186	1.12	.373	.746	1.12	1.49	1.86	2 24	2 61	2 98	3 36	3.73	4.10	4.48
			1 49	1.86	2.24	2.61	2.98	3.36	3.73	4.10	4 48	4 85	5.22	5.60
8	.213	1.28	.426	.853	1.28	1.70	2.13	2.56	2.98	3.41	3.84	4 26	4.69	5 12
			1 70	2.11	2 56	2 98	3.41	3.84	4.26	4 69	5.12	5.54	5.97	6.40
9	.240	1.44	.48	.96	1.44	1.92	2.40	2.88	3.36	3.84	4.32	4 80	5.28	5.76
			1.92	2.40	2.88	3.36	3.84	4.32	4.80	5.28	5.76	6.24	6.72	7.20
10	.266	1.60	.533	1.06	1.60	2 13	2.66	3 20	3.73	4.26	4 80	5.33	5.86	6.40
			2 13	2.66	3.20	3.73	4.26	4.80	5.33	5 86	6.40	6.93	7.46	8.00
11	.293	1 76	.586	1.17	1 76	2 34	2.93	3.52	4 10	4.69	5 28	5 86	6.45	7.04
			2.34	2.93	3.52	4 10	4 69	5.28	5 86	6.45	7.04	7.62	8 21	8 80
12	.320	1.92	.64	1 28	1 92	2.56	3.20	3.84	4 48	5.12	5 76	6.40	7.04	7.68
			2.56	3.20	3.84	4.48	5.12	5.76	6.40	7.04	7.68	8.32	8.96	9.60
13	.346	2.08	.693	1.38	2 08	2 77	3.46	4.16	4.85	5 54	6 24	6.93	7.62	8 32
			2 77	3 46	4.16	4 85	5.54	6.24	6.93	7.62	8 32	9 01	9.70	10.40
14	.373	2 24	.746	1.49	2.24	2 98	3.73	4.48	5.22	5 97	6.72	7.46	8.21	8.96
			2 98	3.73	4.48	5 22	5 97	6.72	7.46	8.21	8.96	9.70	10.45	11 20
15	.400	2.40	.800	1.60	2.40	3.20	4.00	4.80	5.60	6 40	7 20	Wind Resistances per sq. foot.		
			3 20	4.00	4.80	5.60	6.40	7.20	8.00	8 80	9.60			
16	.426	2.56	.853	1.70	2 56	3.41	4.26	5 12	5.97	6.82	7 68	$p = .005\ V^2$		
			3.41	4.26	5.12	5.97	6.82	7.68	8 53	9.38	10.24	V = miles per hour.		
17	.453	2.72	.906	1.81	2.72	3 62	4.53	5.44	6.34	7 25	8 16			
			3 62	4.53	5.44	6.34	7.25	8.16	9 06	9.97	10 88			
18	.480	2.88	.960	1.92	2.88	3.84	4 80	5.76	6.72	7.68	8.64			
			3 84	4.80	5.76	6.72	7 68	8 64	9 60	10 56	11.52			
19	.506	3.04	1.01	2 02	3 04	4.05	5.06	6 08	7.09	8.10	9 12			
			4.05	5 06	6 08	7.09	8.10	9.12	10.13	11.14	12.16			
20	.533	3.20	1.06	2.13	3.20	4.26	5.33	6.40	7.40	8.53	9.60			
			4 26	5.33	6.40	7.46	8.53	9.60	10 66	11.73	12.80			
25	.666	4 00	1.33	2.66	4.00	5.33	6.66	8.00	9.33	10 66	12.00			
			5.33	4 66	8.00	9.33	10.66	12.00	13.33	14.66	16 00			
30	.800	4 80	1.60	3.20	4.80	6.40	8.00	9.60	11.20	12 80	14.40			
			6 40	8.00	9.60	11 20	12.80	14 40	16 00	17 60	19 20			
35	.933	5.60	1.86	3.73	5.60	7.46	9.33	11.20	13.06	14.93	16.80			
			7.46	9.33	11 20	13.06	14.93	16 80	18.66	20 53	22.40			
40	1 066	6.40	2.13	4.26	6.40	8.53	10 66	12.80	14.93	17.06	19.20			
			8.53	10.66	12.80	14.93	17.06	19.20	21.33	23.46	25.60			
45	1.20	7.20	2.40	4.80	7.20	9.60	12.00	14.40	16.80	19.20	21 60			
			9.60	12.00	14.40	16 80	19.20	21.60	24.00	26.40	28.80			
50	1.33	8.00	2.66	5.33	8.00	10.66	13.33	16 00	18 66	21.33	24.00			
			10.66	13.33	16.00	18.66	21.33	24.00	26 66	29.33	32.00			
55	1.46	8.80	2.93	5.86	8.80	11.73	14.66	17.60	20.53	23.46	26.40			
			11.73	14 66	17 60	20.53	23.46	26.40	29.33	32.26	35.20			
60	1.60	9.60	3.20	6 40	9.60	12 80	16 00	19 20	22.40	25.60	28.80			
			12.80	16.00	19.20	22.40	25 60	28.80	32.00	35 20	38.40			

Miles per hour	p = pressure in lbs	Equivalent H-P
5	.125	.0016
10	.50	.0133
12½	.687	.0229
15	1.125	.0452
17½	1.53	.0716
20	2.00	.1066
25	3.125	.208
30	4.5	.360
35	6.125	.572
40	8.00	.853
45	10.125	1.215
50	12.50	1.67
55	15.125	2.22
60	18.00	2.88

The Automobile Index

Everything of permanent value published in the technical press of the world devoted to any branch of automobile industry will be found indexed in this department. Whenever it is possible a descriptive summary indicating the character and purpose of the leading articles of current automobile literature will be given, with the titles and dates of the publications.

Illustrated articles are designated by an asterisk (*).

Aluminum Alloys in Motor Car Building, The Uses of—

An argument for the more extensive use of the metal in automobiles. "Autocar," June 22, 1901.

***Autocar, A Lady's—**

A very neat carriage. The machine in question has been driven many hundreds of miles by its owner, a lady, and never has it been found necessary to call in the aid of anyone to help her on the road. Back seat is detachable. "The Autocar," London, June 29, 1901.

***Batteries, Their Use and Abuse, Storage—**

By Alexander Lodyguine. This series of articles which has been running for some time past ought to prove of value to all users of electric carriages. The author is a recognized authority in the electrical engineering field. "Motor Review," New York, July 4, 1901.

***Bicycle, The Marsh Motor—**

This machine has motor placed between central part of frame as is usual. The driving of rear wheel is effected by means of a sprocket chain. "La Locomotion Automobile," Paris, June 27, 1901.

***Burner, The Clarkson—**

Detailed account of a 200 horse-power burner. The same principle, however, is to be used in the construction of smaller burners for steam carriages. "The Autocar," London, June 22, 1901.

***Car, The Wilson and Pilcher Petrol—**

This is a well designed carriage. The motor has four cylinders, two on each side of the crank chamber. The car is strongly built. Plain bearings are used throughout, except for a roller bearing fitted between the driving bevel wheel and the second change gear. "Autocar," London, June 29, 1901.

***Car, World's Record by an English—**

By Harry J. Swindley. A very interesting account of a high-speed trial of a 50 horse-power Napier. "The Autocar," June 29, 1901.

***Carbureter, A Simple—**

An exceedingly simple device, the invention of Mr. C. Binks. "The Autocar," London, June 22, 1901.

Course, The Paris-Berlin—

By Dr. E. E. Lehwess. A very interesting article dealing with the condition of roads over which this great event was raced. "The Autocar," London, June 22, 1901.

***Fire Engine, A Motor—**

This engine was designed by Mr. Chas. T. Crowden. A speed of 14 miles per hour is claimed for it and it is able easily to climb all the hills in the vicinity where it is to give service. "The Autocar," London, June 29, 1901.

***Motor and Gear, A Simple—**

This machine is the product of Messrs. Crampin, Scott & Co. A very compact arrangement free from complications. "The Autocar," London, June 22, 1901.

***Paris-Berlin Race, The—**

A very full and comprehensive account of the recent great race. "The Motor Car Journal," London, Saturday, June 29, 1901.

***Race, Impressions of the Paris-Bordeaux—**

By H. O. Duncan. A very interestingly written account supplemented by numerous illustrations. "The Autocar," London, June 15, 1901.

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